Highlights From Ontario's Health System Performance Report

September, 2002

Ontario

103-00717/

A Message from the Minister of Health and Long-Term Care

It is my distinct pleasure to release *Ontario's Health System Performance Report.*

The concept of providing such a report was discussed and agreed upon in September of 2000 when the First Ministers issued a communique on health with the commitment to provide clear accountability reporting to Canadians.

The First Ministers of each province and territory directed their health ministers to provide regular and comprehensive reporting on the health programs and services they deliver, health system performance and progress towards priorities set out by the First Ministers at the 2000 conference.

I am proud to say that the Ernie Eves government is firmly committed to regular public reporting on healthcare measures to give Ontarians a clear view of how their healthcare system is performing. This year we have committed $25.5 billion to fund the province's health system, nearly $7 billion more than was spent on health when we took office in 1995. This level of financial commitment reflects our enduring commitment to improved patient care for all healthcare consumers in the province.

On behalf of the Premier and our legislative colleagues, I wish all of Ontario's health professionals every continued success in their vital and much appreciated work.

Sincerely,

Tony Clement,
Minister

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Highlights From Ontario's Health System Performance Report

How Healthy Are We?
How Strong is Our Healthcare System?

How healthy are Ontarians? Are we healthier now than we were 20 years ago? Is the money we invest in our healthcare system improving our health? What are we doing well? What do we need to do better?

Two years ago, Canada's governments (federal, provincial and territorial) made a commitment to Canadians: they agreed to prepare regular health reports for their citizens that would provide information about their health and healthcare systems. For the past two years, Ontario has been working with the federal government and other provinces and territories to develop common performance measures that all parts of the country can use to assess their health and how effective our healthcare systems are. The governments identified 14 performance indicators that can be used to assess the health system's performance, such as how long people can expect to live, how many people develop certain illnesses, how long they have to wait for certain health services, and how satisfied people are with our health services. By using the different measures that make up the indicators, we can see whether our health services are helping people lead longer, healthier lives. We can also identify trends, such as increases in the demand for hip replacements or increases in cancer cases, and make sure the healthcare system can respond.

These are highlights from *Ontario's first Health System Performance Report*. They cover the health services that Ontarians told us were most important to them today.

1. Are We Living Longer?

Yes. Since 1979, our life expectancy – or the average number of years people born in Ontario today are likely to live – has increased steadily, from 75.3 to 79.4 in 1999. Women are likely to live a little longer (81.8 years) than men (76.8 years).

When people lead longer lives, it is usually a sign that a country's population is generally healthy and receives good care when ill. Life expectancy is higher in developed countries, like Canada, than in lower income nations. According to the United Nations Human Development Report 2001, in 1999 the country with the longest life expectancy is Japan: 84.1 years for women and 77.3 years for men.

2. How Healthy Do We Think We Are?

The way we feel about our own health is usually an accurate measure of how healthy we are. We have a good sense of how we are functioning physically and mentally.

In 2000/2001, when Ontarians were last asked to rate their own health[1], 64.6% of men and 61.6% of women surveyed reported their health as excellent or very good. People in their 20s and early 30s claimed to be in the best health, while people age 65 or older did not perceive themselves to be as healthy.

People are more likely to feel healthy when they have resources to meet their needs, live in a healthy environment, and have a network of friends. Our sense of health is also affected by the quality of the healthcare we receive and by how easy it is to get that care when needed. To be healthy, we need good healthcare.

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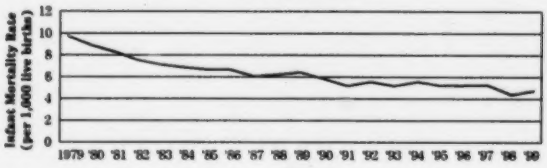
[1] Statistics Canada, Canadian Community Health Survey, Cycle 1.1 – 2000/2001.

3. How Healthy Are Our Children?

It is every country's goal to have healthy children. The number of children who survive the first year of life is a sign of how healthy a country is and whether its healthcare system is effective.

In 1997, the infant mortality rate for 29 developed countries averaged 7.3 infant deaths for every 1,000 live births. Ontario had only 4.9 infant deaths for every 1,000 live births weighing over 500 grams during that year. In fact, our infant mortality rate has been declining for the past 20 years. This rate has dropped from almost 10 in 1979 to 4.6 in 1999 – thanks to better living conditions, a healthy environment, and the healthcare available to women from early in their pregnancy through labour and delivery.

Ontario Infant Mortality Rate Over Time
Excluding Births Less Than 500 grams
1979 to 1999



Statistics Canada, Vital Statistics, Births and Deaths Databases

Working to Reduce Low Birth Weights

Infants are more likely to die in the first year of life if they weigh less than 2,500 grams (5.51 pounds) when they are born[2]. Even if they do survive, low birth weight babies are more likely to have health problems throughout their lives, such as respiratory problems and learning disabilities. Although Ontario's low birth weight percentage is better than those of many other developed countries[3], it can do more to promote healthy pregnancies and further reduce low birth weights. Low birth weight is often a sign of the mother's health. Women are more likely to have healthy, full weight babies if they don't smoke during pregnancy, and receive regular prenatal care.

Many of Ontario's low birth weight babies are born prematurely or are multiple births.

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[2] Health Canada, *The Canadian Perinatal Health Report*, 2000.

[3] Ontario's low birth weight percentage was 5.8%, while the percentage for 26 of the 30 developed countries in the world was 6.1%. Source: Organization for Economic Cooperation and Development, 1997.

4. Are We Trying to Lead Healthier Lives?

There are many things that Ontarians can do to improve their health, such as eating properly, being physically active, and maintaining a healthy body weight. People who are physically active are less likely to develop heart disease, hypertension, stroke, cancer or other illnesses. They are also less likely to suffer from depression, anxiety or stress.

On the other hand, people who are physically inactive are at greater risk of becoming obese. And people who are overweight or obese are more likely to develop chronic illnesses, such as diabetes. They are also more likely to die prematurely.

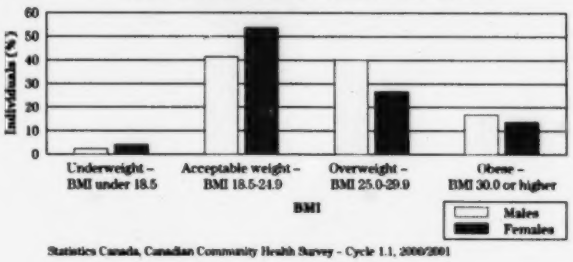
We know that active, healthy-weight people live longer in good health. But are we making the effort to manage our weight and be more active?

Let's start with weight, or Body Mass Index (BMI). BMI is the measure used to determine whether people are a healthy weight for their height. It is calculated as weight in kilograms divided by height in metres squared.

About 53.3% of women in Ontario are an acceptable weight, but only 41.5% of men are an acceptable weight. We have to act now, before unhealthy body mass becomes a greater problem.

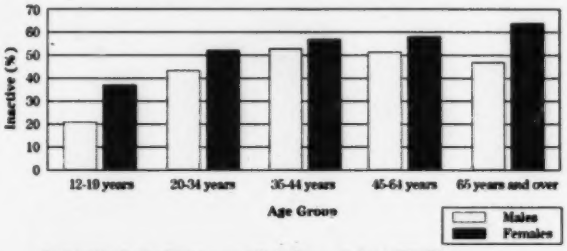
With physical activity, there is also room for improvement. Although Ontarians are reporting being more active today than they were in 1994, 44.8% of men and 54.6% of women still consider themselves to be inactive[4].

Self-Reported BMI for Individuals 20-64 Years Old in 2000/2001 Between Males and Females in Ontario



Statistics Canada, Canadian Community Health Survey - Cycle 1.1, 2000/2001

Ontario Males and Females Physically Inactive Between Age Groups – 2000/2001



Statistics Canada, Canadian Community Health Survey - Cycle 1.1, 2000/2001

[4] Statistics Canada, *National Population Health Survey*, 1994.

5. Are We Aging in Good Health?

As people age, many people develop health problems that cause pain, make it harder for them to move, or interfere with daily activities, such as walking or dressing or eating.

A helpful indicator to assess good health is Disability-Free Life Expectancy, or the number of years an average person is expected to live free of moderate or severe disability. We can use this information to design prevention and treatment programs that help people stay healthy. Ontarians can currently expect to live 68 years of life from birth disability-free; and, if they are free of disability at age 65, they can expect to continue to be disability-free for another 11.3 years.

One health service that can dramatically improve quality of life for people who have trouble with mobility is hip replacement surgery. In one study, over 94% of people who received a hip replacement reported substantial improvement in pain, stiffness, and overall functioning.

In recent years, the demand for hip replacements has increased in Ontario. With our aging population, the demand will continue to grow. Are we able to meet needs now? Will we be ready in the future?

The news is good. Ontario's rate of hip replacements has steadily increased, from 62.8 hip replacements per 100,000 people in 1997 to 66.8 per 100,000 people in 1999.

6. Are We Winning the Fight Against Cancer?

Cancer is a serious health problem in Ontario, particularly in older people. The number of breast cancer cases continues to increase, and lung cancer is still the leading cause of cancer-related deaths in both men and women in Ontario.

Over the past 20 years, there have been significant advances in drug treatments and technologies, which allow people with cancer to live longer and enjoy greater quality of life.

The picture is brightest for breast cancer. Although the number of new breast cancer cases is growing, the number of breast cancer deaths each year has been dropping steadily since 1990. According to the most recent data, 82% of women who are diagnosed with breast cancer are still alive five years after diagnosis. This very hopeful trend is probably the result of the combination of breast screening programs that detect cancers earlier and advances in breast cancer treatments.

Lung cancer is a different story. It is extremely difficult to treat, and survival rates for lung cancer are very low. Only 15% of men and 18% of women are still alive five years after being diagnosed with lung cancer. Because lung cancer mortality rates haven't declined to the same level as other types of cancer, we have to focus more on preventing lung cancer from occurring. One way to do this is by decreasing smoking rates.

7. Are Smoking Prevention Programs Making a Difference?

In Ontario, 12,000 people die prematurely each year because of smoking. And it isn't just smokers who are at risk. People exposed to second hand smoke are also more likely to develop heart disease or lung cancer. Second hand smoke is particularly damaging for children. It is associated with lower birth weights, sudden infant death syndrome (SIDS), bronchitis, pneumonia, asthma and other respiratory diseases. It is estimated that Ontario spends about $1 billion a year just to treat smoking-related illnesses[5].

Ontario has introduced new programs to prevent smoking – particularly among youth – and to limit our exposure to second-hand tobacco smoke.

Over the past four years, the smoking rate for teenagers has decreased. However, for the first time, female teenagers report higher rates of daily and occasional smoking than male teenagers.

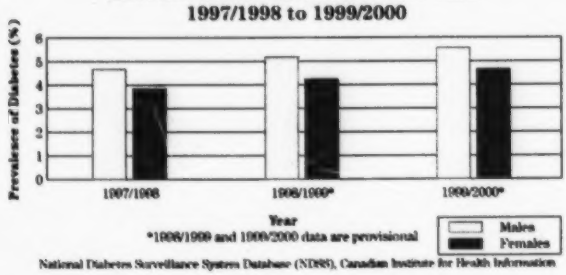
People in all age groups still report being exposed to environmental tobacco smoke. The risk seems to be higher for young people. According to the Canadian Community Health Survey, over 1/3 of Ontario teens (ages 12 to 19) reported being recently exposed to environmental or second hand tobacco smoke – higher than any other age group. Over 46 municipalities have passed no-smoking bylaws, and this number continues to grow.

8. What Are We Doing About Diabetes?

Diabetes is a serious and growing problem in Ontario. Each year, more people are diagnosed with type 2[6] diabetes, and they must cope not only with that health condition, but with the risk of developing other illnesses and complications associated with diabetes, such as heart disease, stroke, kidney failure, limb amputation, and blindness. Diabetes rates are much higher in Northern Ontario than in other parts of the province.

A health problem this serious cannot go unchecked. With its Diabetes Strategy, Ontario is making a long-term investment in programs and services that will help prevent type 2 diabetes and improve care and treatment.

Ontario Age-Standardized Prevalence of Diabetes Between Males and Females Over Time 1997/1998 to 1999/2000



National Diabetes Surveillance System Database (NDSS), Canadian Institute for Health Information

[5] Expert Panel Report, *Actions Will Speak Louder Than Words*, 1999.

[6] Type 2 diabetes is the most common form of diabetes. In it, either the body does not produce enough insulin – needed for the cells to use sugar – or the body's cells ignore the insulin.

9. Are We Receiving Good Quality Care?

One way to measure the quality of care we receive is to monitor "potential years of life lost" (PYLL). PYLL is the number of years of life "lost" when a person dies from any cause before the age of 75. For example, someone dying at age 25 has lost 50 potential years of life. A reduction in potential years of life lost tells us that our prevention and treatment services are effective.

Heart disease is the number one cause of death in the province. But, over the past 10 years, the potential years of life lost to heart attacks in Ontario have dropped by almost 42%. More people are surviving heart attacks and receiving the treatment they need. This change is likely due to a combination of the quality of treatment available in Ontario's cardiac centres, effective health promotion, and individual efforts to adopt a healthier, more active lifestyle. It's also due to better treatment of other diseases that can lead to heart disease, such as diabetes.

Another way to assess the quality of healthcare services is to monitor how many people discharged from hospital after being treated for a certain condition have to be re-admitted for the same problem. When patients receive the treatment they need in hospital, as well as appropriate follow up – either from their physician or home care services – there is usually less need for them to be re-admitted.

Ontario is beginning to track hospital re-admission rates as a way of assessing quality of care, and identifying strengths and weaknesses. What have we learned?

So far, the findings are encouraging. For example, over the past three years, only about 7.5% of people treated for heart attack had to be re-admitted to hospital within 28 days for the same condition.

10. Are Health Services Available When We Need Them?

We want our health system to provide high quality care. We also want it to provide services in a timely manner. Do people receive treatment when they need it? How long do they have to wait? Here we report on wait times for coronary artery bypass graft (CABG) surgery, one type of heart treatment. In future reports, we will report on wait times for other treatments as well.

Some people require CABG urgently. In 2001/2002, for people classified as "urgent," the median wait time for CABG was seven days.

11. Are Elderly People (Over Age 75) Receiving the Home Care Services They Need?

With many people needing some help with basic activities, home care services are becoming more important – particularly for people over age 75. Home care services are one way of supporting people in their homes and neighbourhoods, instead of moving into a facility.

Ontario is working to ensure that these services are accessible to those who need them. Between 1998/1999 and 2000/2001, the number of people over age 75 provided with home care increased from 100,489 to 106,008.

12. Do We Have Access to Health Information When We Need It?

In 2001, the government introduced Telehealth Ontario, a free, confidential telephone service, staffed by registered nurses who provide health information and advice 24 hours a day, 7 days a week.

This is something Ontarians said they wanted: a number to call anytime for answers to health questions. But are we using the service?

Yes. In its first 18 months of operation, Telehealth Ontario received over 1 million incoming calls. Telehealth Ontario is now receiving approximately 3,100 incoming calls a day.

Are we satisfied with the service? Since December 1, 2001, over 35% of the calls are people who have called before, and are now using Telehealth Ontario when they need health advice. Most of the callers are women and most come from the 416 and 905 area codes, where the majority of our population is concentrated.

The registered nurses who provide the service are able to direct callers to the right level of care. Depending on the caller's health problem and symptoms, the nurses will recommend "self care" (something the caller can do at home to resolve the problem), or a visit to a doctor, or a visit to a hospital (in case of emergency). Since December 2001, almost half the people who called (43%) had health problems that they could treat themselves at home. The nurses gave them information, and they did not need to use any other health services. The nurses advised 35% of callers to see a physician, and referred about 14% to emergency departments.

13. Are We Satisfied with Our Health Services?

One of the best ways to find out whether the healthcare system is working is to ask people who have used the system recently.

According to the results of the 2000/2001 Canadian Community Health Survey, almost 85% of Ontarians were very or somewhat satisfied with the health services they received. Results were consistently over 80% for men and women in all age groups. This information is very encouraging.

The same survey also found that 91.7% of Ontarians were very or somewhat satisfied with the services they receive from their physicians.

Using Our Performance Report to Improve Health and Health Services

Ontario's first Health System Performance Report had some good news about our health and our healthcare system. We know that Ontarians are living longer in better health, and that we are making progress in detecting and treating diseases, such as breast cancer and heart problems. We know that many people are getting the health services they need when and where they need them. Most Ontarians feel they are healthy, and they are very satisfied with the quality of our health services, particularly physician services.

We also learned what we have to do to improve. For example, we have to do more to prevent smoking, and encourage people to be more active and maintain a healthy body weight. We also need to act to prevent and treat diabetes.

The government will use *Ontario's Health System Performance Report* to help allocate health resources, develop new health strategies, and improve health and health services. In fact, we are already making healthcare investments based on information in this report.

This year, Ontario will invest $25.5 billion in health services. These resources are designed to improve the health and well-being of Ontarians, and to improve our health services. The following are examples of some health spending initiatives that address the issues in this report.

- $800 million on public health programs designed to prevent infectious diseases, safeguard air and water quality, promote health, support the Canadian Blood Services, and improve life expectancy.
- $67.3 million for the Healthy Babies Healthy Children program, designed to promote healthy child development.
- $71 million between 2000-2004 for stroke prevention, which will grow to $30 million annually by 2004 for a comprehensive, province-wide system of organized stroke care.
- $177 million in new dollars since 1995 for cancer care. In addition, the government has also committed $141 million to construct five new regional cancer centres, and $86 million to expand six existing regional centres.
- $50 million increase in funding over three years in the 2002 budget to enhance the Ontario Cancer Research Network. This is expected to double the number of patients who can benefit from this research.
- $19 million on the Ontario Tobacco Strategy to eliminate smoking and exposure to second hand smoke. Ontario already has laws prohibiting the sale of cigarettes to minors and banning smoking in public places. Recognizing that more must still be done to protect young people, the province recently introduced an extra $5 provincial tax on each carton of cigarettes sold in the province. This should keep more young people (who are price sensitive) from smoking.
- $15 million on the Diabetes Strategy, which will improve services for all Ontarians, including seniors, Aboriginal people and people living in Northern Ontario.
- $1.19 billion on home care services. These services include nursing, personal support, home-making physiotherapy, occupational therapy, speech-language therapy, dietician services, and social work.
- $45 million to provide Telehealth Ontario.

This report provides highlights on 19 of the 54 health measures contained in *Ontario's Health System Performance Report – September, 2002*. To access the full report, check our web site at **www.gov.on.ca/health**, or call INFOline at 1 877 234-4343 or TTY 1 800 387-5559.

Ontario's Health System Performance Report

14 Common Indicator Areas of Health and Health System Performance

September, 2002

Ontario

Acknowledgements

The Ministry of Health and Long-Term Care would like to acknowledge the following organizations in the preparation of this report:

The Canadian Institute for Health Information
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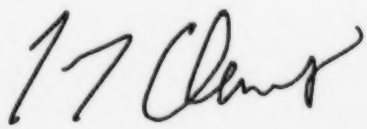
On behalf of the Premier and our legislative colleagues, I wish all of Ontario's health professionals every continued success in their vital and much appreciated work.

Sincerely,



Tony Clement,
Minister

September 30, 2002

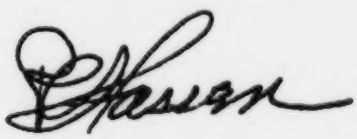
Management's Responsibility for Ontario's Health System Performance Report

Responsibility for the integrity of the Province of Ontario's Health System Performance Report ("the Report") rests with the Ministry of Health and Long-Term Care. The responsibility of the Ministry includes maintaining systems and controls to ensure that information is objective, complete, and accurate in accordance with the reporting requirements approved by the Conference of Deputy Ministers of Health.

In preparing the Report, the Ministry relied on information provided by or obtained from external parties as indicated in the Report. The Ministry's responsibility for information provided by external parties is limited to being reasonably confident that it is free of significant misrepresentation. For information produced by the Ministry, the Ministry is responsible for the quality of the procedures and systems used to develop the information reports.

To the best of our knowledge, the information in this Report is reliable and free from error; however, we are also aware that health indicator data needs to be improved. The health indicators in the Report comply with the definitions, technical specifications and standards of presentation approved by the Conference of Deputy Ministers of Health. The indicators are defined, and their significance and limitations are explained. The Report states and properly describes any departures from what was approved by the Conference of Deputy Ministers of Health and explains plans for the future resolution of issues.

The Provincial Auditor of Ontario reported on the results of applying specified auditing procedures to the Report. The report of the Provincial Auditor follows.



Phil Hassen
Deputy Minister

September 30, 2002

Report of the Provincial Auditor on the Results of Applying Specified Auditing Procedures to Ontario's Health System Performance Report

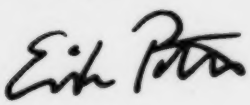
To the Minister of Health and Long-Term Care:

As agreed to on June 18, 2002, under Section 17 of the Audit Act, I have performed the following procedures in connection with the Province of Ontario's Health System Performance Report (the "Report") dated September 30, 2002:

1. Verified that the health indicators reported for Ontario that were based on information obtained from an independent source, such as Statistics Canada or the Canadian Institute of Health Information (CIHI), agreed with the stated sources.
2. Reviewed the source documentation and processes for indicators from Ministry of Health and Long-Term Care sources, and verified that the reported results agreed with these sources.
3. Verified that calculations were accurately performed to convert source information into the report results.
4. Verified that the health indicators were reported in accordance with the requirements contained in the Plan for Federal/Provincial/Territorial Reporting on 14 Indicator Areas, including the indicator name and description, and relevant notes and limitations concerning data sources, and year-to-year comparability.

As a result of applying the above procedures, I found no exceptions. However, these procedures do not constitute an audit and therefore I express no opinion on the Province of Ontario's Health System Performance Report and the indicators reported therein.

This Report is a new and important accountability initiative for Ontario. I am encouraged by the work undertaken by the Ministry in the preparation of the first Ontario Health System Performance Report. I am also encouraged that the Ministry, CIHI and Health Canada are improving their procedures for ensuring the accuracy of their data, with emphasis on the accuracy of data that they receive. Accurate data leads to better decision-making and improved accountability, and may increase the level of audit assurance that can be provided.



Erik Peters, FCA
Provincial Auditor
Toronto, Ontario

September 30, 2002

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Introduction

The Commitment

Canadians will have publicly funded health services that provide quality healthcare and that promote the health and well-being of Canadians in a cost-effective and fair manner.

First Ministers' Meeting
Communiqué on Health, September 11, 2000

The key goals of the healthcare systems in Canada are to preserve, protect, and improve the health of every Canadian. To achieve these goals, the healthcare systems aim to ensure *all* Canadians timely access to appropriate, quality health services anywhere in Canada, based solely on their needs and not on their ability to pay. The health system also looks to the future, and strives to ensure the sustainability of health services for all for years to come.

To realize their vision of health, the First Ministers have made a number of commitments, including:

- To continuously renew healthcare services by working with other governments, communities, service providers, and Canadians to meet emerging needs.
- To share information that helps contribute to continuous quality improvement and efficiency of health care services.
- To report regularly to Canadians on the health status, health outcomes, and the quality of service received from publicly funded health services.

Health Ministers were directed to collaborate on the development of a comprehensive framework of comparable indicators for public reporting, to provide comprehensive and regular reports, beginning September 2002, on the performance of their health programs, and to provide for appropriate third party verification of their reports.

By working together and sharing information, all governments will be more accountable to Canadians for the health programs and services they deliver.

Fulfilling the Commitment

How can governments assess the effectiveness of our health services and share that information with their citizens? The use of performance measures is one option. By establishing certain indicators that can be used to "measure" our health or the impact of health services, governments can help Canadians understand how their publicly funded health services are delivered and whether they are achieving their goals and objectives. The use of standard performance indicators will also tell us what we are doing well and where we need to improve. They will encourage all parts of the country to share best practices and continually improve health services. This information can also help individual Canadians make more informed health choices.

In November 2000, the Health Ministers established the Performance Indicators Reporting Committee (PIRC), to develop a process for reporting to the public on healthcare system performance. The main task of the PIRC, which is chaired by Alberta and has representatives from Ontario, Quebec, Newfoundland, and the federal government (Health Canada), was to establish a framework that would allow comparable health reporting across all governments.

Since its inception, the PIRC has relied heavily on the advice and assistance of two Federal/Provincial/Territorial (FPT) advisory committees, which provided expert advice on the definition, interpretation, and overall suitability of specific indicators for health services and population health. Statistics Canada, the Canadian Institute for Health Information (CIHI), and l'Institut des statistiques du Quebec (ISQ) also provided assistance, contributing to the technical development of indicators and providing related data.[1]

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[1] Most of the indicators in this report are based on data provided to the Ministry by Statistics Canada, Health Canada and the Canadian Institute for Health Information (CIHI). The federal government and the other provincial and territorial governments are also using these data sources in the preparation of their reports.
During the preparation of this report, the Ministry was informed that Health Canada was working on improving its procedures for ensuring the accuracy of its data, with emphasis on the accuracy of the data it receives. The Ministry was also informed that CIHI was in the process of: conducting a study, which will provide information on the quality of its input data to identify areas, if any, where corrective action needs to be taken; and improving the documentation of its quality assurance processes. For reported information produced or obtained directly by the Ministry, the Ministry recognizes the need for improved procedures for ensuring the accuracy of data.

The Performance Indicators

The Prime Minister and the Premiers identified 14 performance indicators that would provide relevant information for the public and be technically sound. Those 14 indicators were divided into three topic areas:

- **Health Status** indicators or measures that help us understand the present health of many Canadians. These indicators help answer the question, "Just how healthy *are* Canadians right now?"
- **Health Outcomes** indicators or measures that help assess the impact of health programs and services on health status. The PIRC focused on the diseases that have the greatest health impact – cancer, heart disease and stroke – and selected measures where the link between health system interventions and health outcomes is well-established. These measures also take into account that some interventions are designed to save lives while others are designed to improve health-related quality of life.
- **Quality of Service** indicators or measures that assess whether Canadians are receiving appropriate, timely, effective, accessible and acceptable health services.

The PIRC then divided the 14 performance indicators into 67 specific measures that can be used to paint a more precise picture of our healthcare system today. In this document, Ontario reports on all 14 indicators, and 54 of the 67 measures. In the future, when technical issues with the remaining measures have been resolved, Ontario will report on additional measures. The Provincial Auditor of Ontario has performed specified audit procedures to verify the health indicators presented in this report. His report, including details of the procedures that were performed, forms part of this report.

Ontario Demographics: A Snapshot

The purpose of monitoring health and health system indicators is to ensure the province's healthcare services are meeting the needs of Ontario's population now and in the future. Some of the factors that influence health needs in Ontario include population growth, cultural diversity, and aging.[2] In 2000/2001, Ontario's population grew by 205,100 to 11,874,400 (5,859,968 male, 6,014,468 female).[3] This represents a growth rate of 1.6%, a slight increase over the previous year's rate of 1.3%. Currently, an estimated 38.4% of the total population of Canada lives in Ontario.[4]

Most of this growth is attributable to immigration. In 2000/2001, an estimated 148,425 immigrants – or about 59.3% of all immigrants who arrived in Canada – settled in Ontario. This is an increase over the 133,323 and 104,010 immigrants who came to Ontario in the previous two years respectively.[5] Ontario's 2000/2001 immigration levels were responsible for over 72% of the province's overall growth in that year. The top ten source countries for immigrants to Ontario in 2001 were: the People's Republic of China, India, Pakistan, the Philippines, the Republic of Korea, the United States, Iran, Romania, Sri Lanka, and the United Kingdom.[6] Further adding to the diversity of Ontario is the province's Registered Indian population, which increased by 2.4% to 155,443 in 2000/2001. Approximately 25% of Canada's total Registered Indian population lives in Ontario.[7]

Ontario's population is aging. In the past decade, the median age of our population increased by 3.6 years from 33.6 in 1991 to 37.6 in 2001. Population projections indicate that by 2028, Ontario's median age will have increased to 43.0. The growth in seniors in the population will accelerate after 2011 as baby boomers begin to turn 65[8]. By 2028, the population aged 65 and over will have more than doubled, from 1.4 million (12.5% of the population) in 1999 to 3.2 million (21.1%), and the population aged 75 and over will have also more than doubled, increasing from 0.6 million to 1.4 million.[9]

Changing demographics are a key factor in shaping current and future healthcare initiatives in Ontario. For example, to effectively serve a population of increasing cultural diversity, healthcare services might have to be delivered in a number of different languages, with a greater focus on cultural sensitivity. Ontario's aging population will also put an increasing demand on healthcare services, and our health systems will have to adapt to handle the increased pressures.

Above all, the Ontario health system is a service industry that must meet the needs of all citizens, regardless of age or race. Ontario strives to meet these needs, by providing appropriate care that is effective, efficient, and sustainable now and in the future.

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[2] Statistics Canada, Population, Canada, the Provinces and Territories, CANSIM table 051-0001.
[3] Ibid.
[4] Ibid.
[5] Citizenship and Immigration Canada – Facts and Figures 2001: Immigration Overview.
[6] Ibid.
[7] Department of Indian and Northern Affairs Canada – Basic Departmental Data 2001.
[8] Ontario Ministry of Finance, Ontario Population Projections, 1999-2028.
[9] Ibid.

Health Status Indicators

1. Life expectancy

1a. Life expectancy

Overview

Life expectancy – or the number of years an average person is expected to live if all the mortality rates and living conditions remain the same throughout his or her life – is one of the most widely used indicators of a population's health. Life expectancy provides a picture of a population's overall health as well as the quality of healthcare people receive when they are ill: A healthy population that has access to quality healthcare is likely to have a longer life expectancy.

Life expectancy can be influenced by a number of factors, such as an individual's location, marital status, and income or education. People living in developed nations generally have a higher life expectancy than those living in lower-income nations. Life expectancy is also affected by length of life already lived. As people age, they may face decreased mortality and increased life expectancy. For example, as children age, their bodies become much stronger, and the likelihood of their acquiring potentially fatal diseases which afflict infants decreases greatly. In addition, as people age, their chances of reaching older ages increases. While someone age 90 has an increased chance of dying within the next year, he or she also has a much greater chance of reaching age 91 than someone who has just turned 80.

Life Expectancy in Ontario

In 1999, Japan had the highest life expectancy in the world: 84.1 years for women and 77.3 years for men.[10] By comparison, Canada had a life expectancy of 81.7 years for females and 76.3 years for males. Ontario's life expectancy was slightly higher than the Canadian average: 81.8 years for females and 76.8 years for males. As the following graph illustrates, life expectancy for both males and females in Ontario is on the rise.[11]

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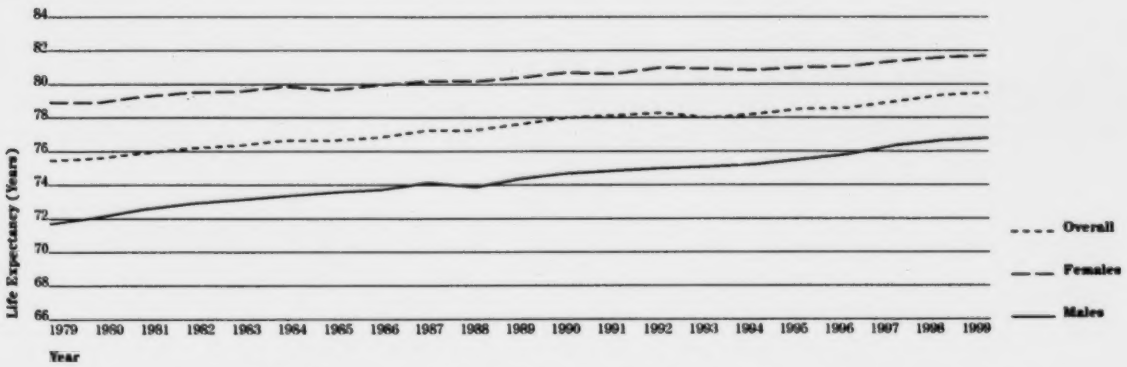
[10] United Nations - *Human Development Report*, 2001.

[11] Rates used in this life expectancy table are calculated with data that exclude: births to mothers not resident in Canada; births to mothers resident in Canada whose province or territory of residence is unknown; deaths of non-residents of Canada; deaths of residents of Canada whose province or territory of residence was unknown; deaths for which the age of the decedent was unknown.

Ontario Male vs Female Life Expectancy from Birth in Years Over Time – 1979 to 1999



Source: Statistics Canada, Vital Statistics, Birth and Death Databases and Demography Division (population estimates)[12, 13]

Life expectancy varies within Ontario. For example, people living in the northern District Health Council[14] (DHC) regions have a lower life expectancy than the provincial average. In addition, the life expectancy of people in the North and Central South planning regions is significantly lower than the provincial average. Over the past decade, the gap between the lowest and highest life expectancy in the province has been widening, from 3.6 years in 1990 to 3.9 years in 1996/1997.[15]

Health Services that Influence Life Expectancy

Life expectancy is an indicator of the quantity rather than the quality of life. People may be living longer, but may not necessarily enjoy good health. Increases in life expectancy may be associated with increases in serious debilitating diseases. Therefore, the goal of the healthcare system should be to develop the health strategies, programs, technologies and treatments that will not only increase the number of years people live, but ensure they are able to live those years in good health.

The most effective way to improve public health and life expectancy is by preventing or eliminating illness. Ontario supports a number of health programs and services designed to prevent or eliminate illness, and increase life expectancy. For example:

- Three programs delivered by all public health units throughout Ontario work directly and indirectly to help prevent illness, reduce mortality, and increase life expectancy for Ontarians of all ages: Chronic Diseases and Injuries, Family Health, and Infectious Diseases (see Ontario's "Mandatory Health Programs and Services Guidelines").

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[12] For events in the years 1990 to 1995 however, it was not possible to completely edit vital statistics data reported by Ontario. Invalid codes were changed to the "not stated" category, and unlikely situations were accepted as reported.

[13] There is thought to be some under-reporting and/or late reporting in remote areas.

[14] District Health Councils are planning and advisory bodies that report to the Ministry of Health and Long-Term Care. Councils research, identify and plan for district health needs, coordinate health planning activities, monitor local health system performance, and cooperate in social development activities for their district. There are 16 geographically defined councils, representing all Ontario residents.

[15] Institute for Clinical Evaluative Sciences, *Adding Years to Life and Life to Years: Life and Health Expectancy in Ontario*. February, 2001.

- Cancer Care Ontario and Ontario's Heart Health Program both strive to eliminate life threatening diseases that reduce life expectancy. To date, it is estimated that the elimination of cancer would have the largest impact on life expectancy, adding 3.5 years of life for both men and women, while the elimination of ischemic heart disease is estimated to have the second greatest impact, allowing men an extra 3.2 years and women an extra 2.8 years of life.[16] With Ontario's continued commitment to and support for cancer care and heart health services, the province strives to sustain and/or surpass these gains.

Related Indicators
1b. Disability-Free Life Expectancy (DFLE)

1b. Disability-Free Life Expectancy (DFLE)

Overview
Disability-Free Life Expectancy (DFLE) is the number of years an average person is expected to live free of moderate or severe disability, starting from birth or from the age of 65, based on mortality statistics and disability prevalence patterns by age and sex for a given year. This indicator is used to distinguish between the years of life the people live free of any limitations on their activity, and the years they live with at least one activity limited because of disability. For this indicator, anyone who is in an institution or whose disability is moderate or severe enough to limit one or more of the person's activities is counted as disabled. Anyone who has a disability that does *not* limit activity is not counted as disabled.

The DFLE indicator was developed to accurately reflect the fact that not all years of life are lived in perfect health. As people age, they are more likely to develop chronic diseases, frailty or a disability. For an aging population like Ontario's, disability-free years of life become increasingly important. People want to know whether increases in life expectancy will be associated with more or less disability. For that reason, DFLE is being used increasingly to complement the conventional life expectancy measure, and provide a way to assess quality as well as quantity of life. For example, if a population's DFLE is increasing more rapidly than its life expectancy, then not only are people living longer, they are also living a greater portion of their lives free of disability and in better health.

Disability-Free Life Expectancy in Ontario
As the following graph illustrates, the average Ontarian experiences 68 years of disability-free life from birth, and 11.3 years of disability-free life after age 65. There is little difference in disability-free life expectancy between men and women in Ontario. Ontario males experience on average 66.6 years of disability-free life from birth and 10.6 years of disability-free life from the age of 65, while females experience on average 69.4 years of disability-free life from birth and 11.9 disability-free years from the age of 65.[17]

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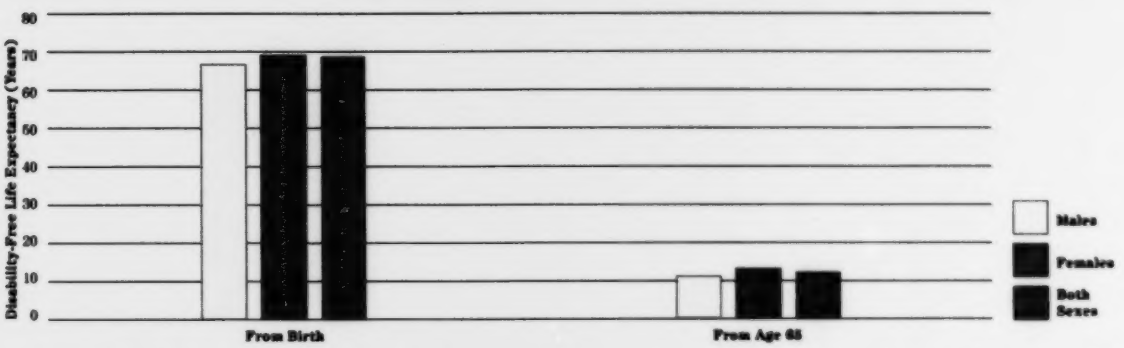
[16] Institute for Clinical Evaluative Sciences, *Adding Years to Life and Life to Years: Life and Health Expectancy in Ontario*. February, 2001

[17] In the data for this graph, non-residents of Canada are excluded from the deaths and population estimates in the life tables used to develop these findings. Individuals living on military bases or First Nation reserves are excluded from the health survey and are implicitly treated as having the same average rates of disability as the rest of the population.

Ontario Males vs Females Disability-Free Life Expectancy From Birth and Age 65 – 1996



Source: Statistics Canada, Vital Statistics, Death Database and Demography division; census (institutional population counts)[18, 19]

Disability-free life expectancy varies across the province. People living in District Health Council (DHC) regions in the North have a lower disability-free life expectancy than those in the South Central region. Non-institutionalized Ontarians can expect to live 91.8 percent of their lives in good health.[20]

Because DFLE data have only recently become available, Ontario cannot provide any information on trends in disability-free life expectancy. However, in the future, DFLE data will be used to assess the effectiveness of disease prevention programs in maintaining health and of interventions in restoring health.

Health Services that Influence Disability-Free Life Expectancy

Ontario has developed a number of prevention and treatment initiatives designed to increase disability-free years of life:

- The *Diabetes Strategy* promotes early intervention and prevention of diabetes complications. In Ontario, diabetes is associated with an estimated 28% of kidney dialysis, 50% of new cases of blindness, while an estimated 21% of people with diabetes will develop heart disease or have a stroke.[21] Over 100 diabetes education centres operating across Ontario provide education and follow-up services designed to reduce the incidence of diabetes-related complications by 50%.
- The *Alzheimer Strategy* involves a range of health promotion, prevention, education, clinical guidelines, control, treatment, surveillance and research programs designed to reduce mortality, morbidity, and the financial costs associated with Alzheimer's Disease.
- The *Plan of Action for Asthma* involves a range of health promotion, prevention, education, clinical guidelines, control, treatment and research programs designed to reduce mortality, morbidity, and the financial costs associated with asthma. One of the most prevalent and increasing chronic conditions, asthma afflicts approximately 20% of children and 10% of adults in Ontario.[22] It also has a significant impact on healthcare utilization and expenditures, workplace productivity, and quality of life for asthmatics and their families.

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[18] For events in the years 1990 to 1995 however, it was not possible to completely edit vital statistics data reported by Ontario. Invalid codes were changed to the "not stated" category, and unlikely situations were accepted as reported.

[19] There is thought to be some under-reporting and/or late reporting of deaths in remote areas.

[20] Institute for Clinical Evaluative Sciences *Adding Years to Life and Life to Years: Life and Health Expectancy in Ontario*. February, 2001

[21] Ontario Ministry of Health and Long-Term Care – *Diabetes: Strategies for Prevention Report of the Chief Medical Officer of Health* – November, 1999.

[22] The Ontario Lung Association, *Your Lungs: What is Asthma?* 2001.

- The *Ontario Stroke Strategy* program works to improve patient outcomes and increase disability-free life expectancy. For example, emergency response teams are trained to recognize ischemic strokes and transport those affected to hospitals that can provide thrombolytic therapy (tpA). When tpA is administered within the three-hour window after a stroke occurs, it can reverse some of the debilitating effects. Stroke rehabilitation pilot projects are leading to changes in care to allow stroke survivors to improve quality of life. The Ministry has also funded the Heart and Stroke Foundation to develop a manual to assist long-term care facilities in caring for stroke patients.
- Ontario's 55 *Community Health Centres* (CHCs) offer a range of programs and services, including primary care services, individual and group health education programs, and community-wide prevention initiatives, such as exercise groups for people living with arthritis, health promotion campaigns, and education to address many health issues that could lead to disability.
- The *Aboriginal Healing and Wellness Strategy* funds 10 Aboriginal Health Access Centres, which provide health promotion, disease prevention and treatment services designed to increase disability-free years of life.
- *Home Care Services* provide occupational therapists who conduct home safety assessments designed to reduce the risk of injuries, and provide timely rehabilitation therapy for people who are not able to attend outpatient services. This increases the health system's ability to provide physical, occupational, and speech therapy for people recovering from an accident, stroke or other injury.
- The *Assistive Devices Program* provides funding to Ontario residents who have physical disabilities to purchase assistive devices that will increase their independence.
- Ontario's recently completed Community Health Centre Arthritis Pilot Project, which was based on clinical practice guidelines for arthritis management, produced self-care resources and information kits for patients. It also provided professional education for multi-disciplinary healthcare teams. According to evaluation results, the pilot project had a positive impact on health outcomes and resulted in improvements in both patient knowledge and provision of care.
- Ontario is currently developing an *Osteoporosis Action Plan* to improve and promote prevention and treatment of this condition.
- The *Addictions Strategy* prevents and treats addictions related to alcohol use, drug use, solvent use, and problem gambling, which can lead to disability and threaten health and life expectancy.
- *Mental Health and Supportive Housing Services* provides housing and support services for people with mental health and addictions problems, and for long-term care clients in the community.

Ontario intends to continue to support and improve these programs and services.

Related Indicators

5a-d. Change in Life Expectancy
6a. Total Hip Replacement Rate
6b. Total Knee Replacement Rate
7a-d. Reduced Burden of Disease, Illness, and Injury
13e. Exposure to Environmental Tobacco Smoke

2. Infant Mortality

Overview

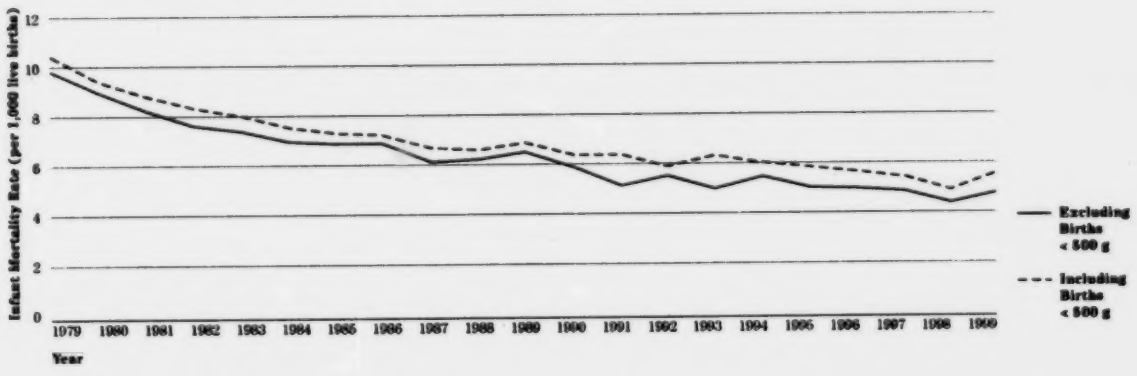
Infant mortality is a long-established measure of child health. This indicator tells us about the health status and healthcare of a population, the effectiveness of preventive care, and the attention paid to maternal and child health. Infant mortality rates may also reflect the availability of reproductive technologies, which have an impact on the rate of multiple and pre-term births. One of the principle risk factors for infant mortality in Canada is low birth weight (i.e., less than 2,500 grams but more than 500 grams at birth). Pre-term births account for approximately 75 to 85% of all perinatal deaths in Canada.[23] Early, regular prenatal care, and appropriate levels of obstetrical care during labour, delivery, and the postpartum period appear to have a significant impact on birth weight and on the proportion of low birth weight babies who survive.

The infant mortality rate is the ratio of the number of infants who die in the first year of life to the total number of births in that year. Infant mortality is expressed as a rate (per 1,000 live births) for each year.

Infant Mortality in Ontario

In 1999, Canada's infant mortality rate was 4.4 per 1,000, and Ontario's rate was slightly higher: 4.6 per 1,000 for babies born weighing over 500 grams. Over the past 20 years, Ontario's infant mortality rate has declined relatively steadily (see graph below). When babies born weighing less than 500 grams are included, the reduction in the infant mortality rate is slightly less significant.[24]

Ontario Infant Mortality Rate Over Time – 1979 to 1999



Source: Statistics Canada, Vital Statistics, Births and Deaths Databases[25, 26]

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[23] *Canadian Perinatal Health Report*, 2000.

[24] For purposes of calculation, births to mothers not resident in Canada, infant deaths to non-residents of Canada, and infants born outside the mother's province/territory of residence were excluded from the sample. Infants who died outside their mother's province/territory were included in the mother's province/territory of residence.

[25] For events in the years 1990 to 1995 however, it was not possible to completely edit vital statistics data reported by Ontario. Invalid codes were changed to the "not stated" category, and unlikely situations were accepted as reported.

[26] There is thought to be some under-reporting and/or late reporting of deaths in remote areas.

Health Services that Reduce Infant Mortality

Ontario has developed many programs that strive to reduce infant mortality and increase the proportion of babies born at a healthy weight:

- Public health units across the province deliver ***Reproductive Health*** and ***Child Health*** programs which promote parenting skills, and provide information on topics such as infant nutrition, injury prevention, family functioning, social supports, and coping skills.
- ***Healthy Babies Healthy Children***, a joint program of the Ministry of Health and Long-Term Care (MOHLTC) and the Ministry of Community, Family and Children's Services (MCFCS), is a prevention/early intervention program designed to provide universal services to improve the health and well-being of all of Ontario's children, prenatally to age six, and to provide intensive targeted services for families at high risk of problems with healthy child development. Universal services include a prenatal screen for social and environmental risks, and education material on healthy child development, while targeted services include ongoing professional and, where appropriate, lay home visiting. The program is managed by the province's public health units, but all organizations and agencies that serve families and children are involved. In place for only four years, Healthy Babies Healthy Children has already had a positive impact. Preliminary results indicate that families at high risk who participate in the program report greater confidence in their parenting skills and their children score higher on infant development measures than high risk families who do not participate.
- The ***Aboriginal Healing and Wellness Strategy*** provides an Aboriginal Healthy Babies Healthy Children program that provides the same programs and services to Aboriginal communities.
- Since 1994, the ***Ontario Midwifery Program*** has funded midwifery services through twenty provincial transfer payment agencies. Midwives provide comprehensive prenatal and postnatal education and support that contribute to improved maternal nutrition and increased breastfeeding rates among newborns.

Related Indicators

3. Low Birth Weight
13e. Exposure to Environmental Tobacco Smoke

3. Low Birth Weight

Overview

Low birth weight (less than 2,500 grams but more than 500 grams) is an indicator of newborn babies' general health, and a key determinant of infant mortality. Low birth weight babies are at a greater risk of dying during the first year of life. They are also at risk of suffering from certain disabilities, such as mental retardation, visual and respiratory problems, and learning disabilities.

Healthy women are more likely to have healthy birth weight babies, while women who smoke during pregnancy or have an unhealthy body mass before pregnancy are more likely to have low birth weight babies. Low birth weight is also associated with social factors, such as exposure to environmental tobacco smoke and economic circumstances. Poor women are more likely to have low birth weight babies. Low birth weight is also associated with multiple births (e.g., twins, triplets), pre-term births, and assisted conception.

Access to early and regular prenatal care and an appropriate level of obstetric care during labour, birth, and the early postpartum period can reduce the number of low birth weight babies, and increase the proportion of low birth weight babies who survive.

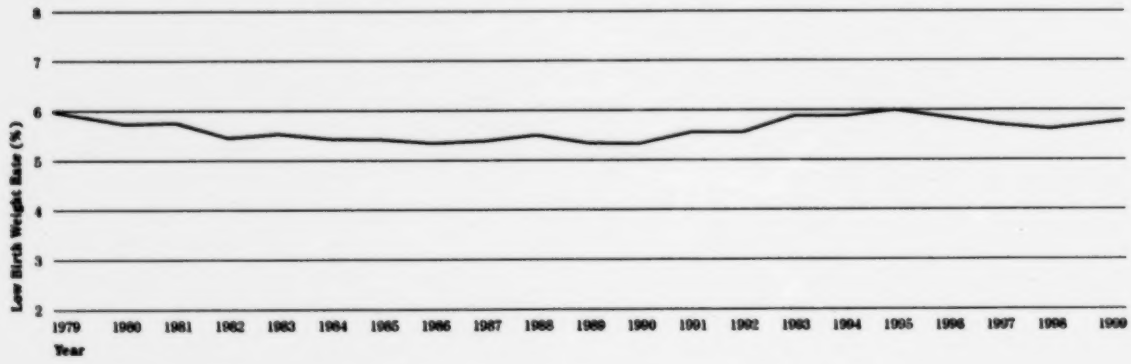
Low birth weight is expressed as a percentage, and is defined as the proportion of live births (birth weight known) with a birth weight less than 2,500 grams and at least 500 grams.[27]

Low Birth Weight in Ontario

In 1999, Ontario had a low birth weight rate of 5.8% for all births, a rate of 2.0% for full-term births, and 1.7% for single full-term births. Ontario's low birth weight rate compares favourably to that of other developed countries. In 1997, Ontario's rate was 5.8%, while the low birth weight rate for 26 of the 30 developed countries was 6.1% of live births.[28]

Ontario's low birth weight rates for full-term births has declined slightly over the past 10 years, and its rate of 2.0% is encouraging.

Ontario Rate of Low Birth Weight (500-2,500 g) Over Time – 1979 to 1999



Source: Statistics Canada, Vital Statistics, Births and Deaths Databases[29, 30, 31]

The province's higher overall low birth weight rate may be due in part to the strength of its intensive neonatal critical/intensive care program. Because of this program, multiple births and babies born prematurely are more likely to survive. The ability of the healthcare system to intervene and save premature babies reflects in the province's overall low birth weight rate.

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[27] Over time, the reporting of live births under 500 grams has improved. However, to allow comparisons of low birth weight over time and across jurisdictions, births with unknown weights as well as those under 500 grams are excluded from this report.

[28] FPT Performance Indicators Reporting Committee, *Plan for FPT Reporting on 14 Indicator Areas*, June 2002.

[29] Calculated rates exclude birth weights under 500 grams and births to mothers who are not residents of Canada. Infants born outside Ontario to mothers resident in Ontario are included in the calculation of Ontario's rate.

[30] For events in the years 1990 to 1995 however, it was not possible to completely edit vital statistics data reported by Ontario. Invalid codes were changed to the "not stated" category, and unlikely situations were accepted as reported.

[31] There is thought to be some under-reporting and/or late reporting of deaths in remote areas.

Health Services that Promote Healthy Birth Weight

Ontario has implemented a number of programs designed to promote healthy pregnancies and reduce the number of low birth weight babies born in the province:

- The *Reproductive Health* program offered by public health units has a target of reducing the rate of low birth weight babies to 4% by the year 2010. To promote healthy pregnancies, it provides education about personal health practices in schools, workplaces, and local agencies.
- Ontario's *Early Years Plan* includes several programs designed to support healthy pregnancies, birth, and optimal development in the first years of life, including *Healthy Babies Healthy Children*, family programming within *Community Health Centres*, the education and parenting support provided by *Ontario Early Years Centres*, and public health programs such as *Promote Healthy Pregnancy and Child Development*, and *Support for At-Risk Pregnant Women*.
- The *Aboriginal FAS-FAE* (Fetal Alcohol Syndrome – Fetal Alcohol Effects) and *Aboriginal Child Nutrition* programs provide prenatal services for Aboriginal women.

Related Indicators

2. Infant Mortality
13e. Exposure to Environmental Tobacco Smoke
14a. Percent Teenaged Smokers
14c. Body Mass Index

4. Self-Reported Health

Overview

Self-reported health – or the way people assess their own health – is a general, subjective indicator of individuals' overall physical and mental health status. An individual's own health assessment can take into account incipient disease, disease severity, aspects of positive health status, and social and mental function. It is also influenced by well recognized determinants of health, such as income, social status, education, employment, social support networks and physical environments.[32] For example, people who have a good education, job, and income are more likely to perceive themselves as healthy.

Studies indicate that when individuals rate their health, they provide information that has important predictive power for the incidence of chronic disease, functional decline, available services and, ultimately, survival.[33] Many longitudinal studies have found that self-reported health is predictive of mortality even when more objective measures, such as clinical evaluations, are taken into account.[34]

Data on self-reported health were collected through population surveys (National Population Health Survey, Canadian Community Health Survey) of those 12 years of age and older, living in private households. Participants were asked to rate their health using a five point reporting scale: poor, fair, good, very good, and excellent. Those reporting their health as excellent or very good are reported here, as a percentage.

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[32] Report of the Federal/Provincial/Territorial Advisory Committee on Population Health. *"Intersectoral Action Towards Population Health"*. June 1999

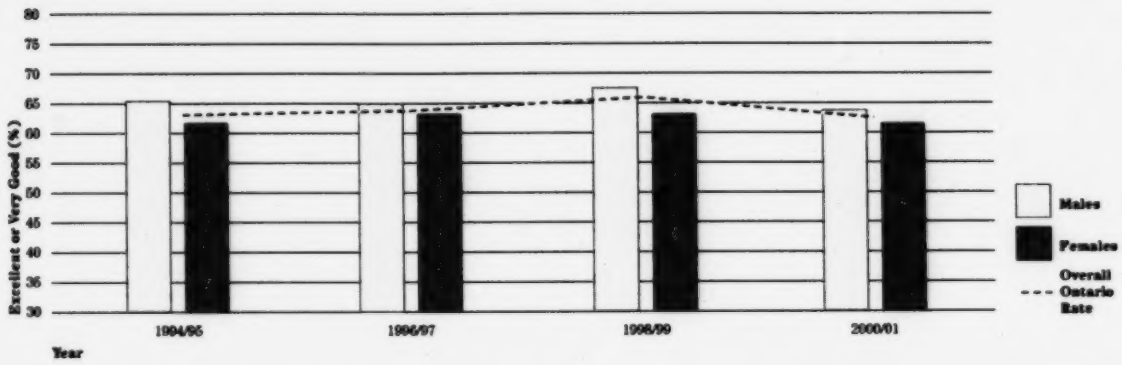
[33] FPT Performance Indicators Reporting Committee, *Plan for FPT Reporting on 14 Indicator Areas*, June 2002.

[34] Ibid.

Self-Reported Health in Ontario

As the following graph illustrates, the levels of self-reported health have remained relatively constant over time for both males and females. The graph also indicates that men in Ontario are slightly more likely than women to rate their health as excellent or very good (64.6% compared to 61.6% in 2000/2001). As a note, 11.6% of males rated their health as fair or poor, compared to 12.7% of females in 2000/2001.

Ontario Males vs Females Self-Reported Health Over Time – 1994/1995 to 2000/2001



Source: National Population Health Surveys (1994-95 to 1998-99),* Canadian Community Health Survey – Cycle 1.1 – 2000/2001, Statistics Canada

Age appears to be a factor in self-reported health. Ontarians in their 20s and 30s are the most likely to report high perceptions of health (76.3% of males and 72.5% of females), while only 37.2% of those 65 years of age and older rate their health as excellent or very good.

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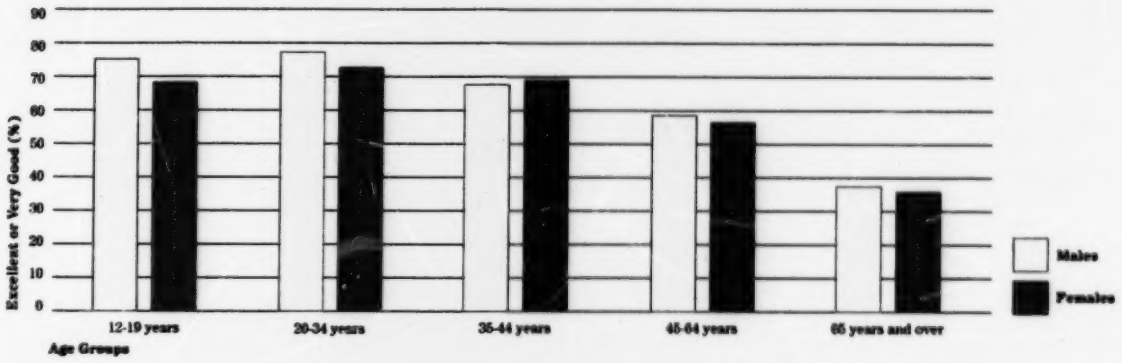
* Persons living on First Nation reserves and on Crown lands, residents of institutions, full-time member of Canadian Armed Forces and residents of certain remote regions are excluded from the sample. Persons less than 12 years of age are not surveyed.

Ontario Males vs Females Self-Reported Health for Various Age Groups – 2000/2001



Source: Canadian Community Health Survey – Cycle 1.1 – 2000/2001, Statistics Canada

Health Services to Promote Self-Reported Health

Ontario recognizes that disparities in perceived health exist, and that they are influenced by the healthcare system and also by many factors beyond the healthcare system, such as income, education, employment and social support. The Ministry of Health and Long-Term Care develops all policies, programs, and initiatives within the context of these influences and with the goal of improving the health status of all Ontarians.

Related Indicators

Self-reported health could be influenced by all measures of health status, health outcomes, and quality of service.

Health Outcomes Indicators

5. Change in Life Expectancy

5a. Age-Standardized Mortality Rates for Lung, Prostate, Breast and Colorectal Cancer, Acute Myocardial Infarction (AMI), and Stroke
5ai. Age-Standardized Mortality Rates for Lung, Prostate, Breast and Colorectal Cancer

Overview

Cancer is a leading cause of morbidity and mortality in Ontario, and a major contributing factor in premature death among both elderly and non-elderly. The risk of developing cancer increases markedly after age 65. As Ontario's population ages, a larger proportion is likely to develop cancer. This disease also creates a substantial burden on the healthcare system. In terms of direct healthcare costs, cancer ranks behind cardiovascular and respiratory diseases.

Some risk factors for cancer are also associated with other life threatening illnesses, such as heart disease and stroke: smoking, poor diet, and lack of physical activity. Others are unique to cancer, such as sun exposure, which is the cause of most skin cancers, including melanoma.

Over the past 20 years, there have been significant advances in drug treatments and technologies, which allow people with cancer to live longer and enjoy greater quality of life. By measuring mortality rates for different types of cancer over time, Ontario can assess the impact or performance of prevention, early detection, and treatment programs.

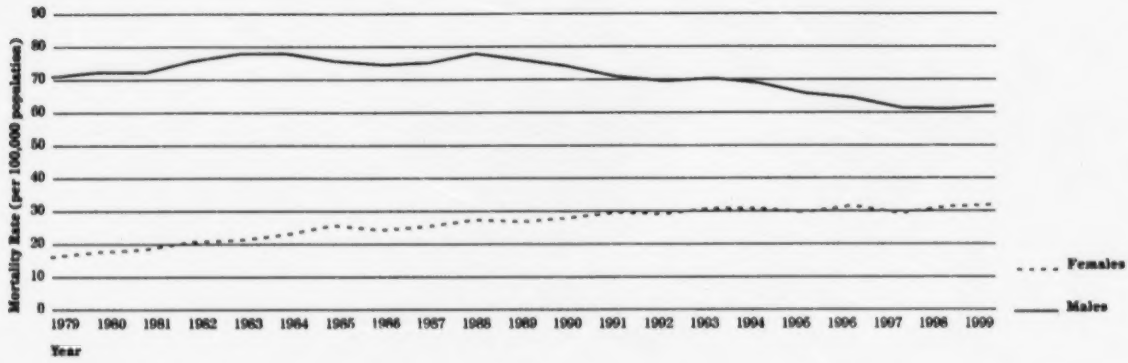
The mortality rate for each type of cancer is defined as the mortality rate per 100,000 population if the population in a given year had the same age structure as the 1991 Canada population. This allows for greater comparability over time.

Cancer Mortality Rates in Ontario

Lung cancer is now the leading cause of cancer-related deaths in Ontario, and in all other provinces and territories. Smoking is a leading cause of lung cancer, and a significant risk factor for cardiovascular and respiratory diseases. From 1994 to 2000, Ontario's smoking rate showed a continuous decline, and is now at a low of 24.5%.* To continue to be effective, efforts to reduce lung cancer and its mortality must therefore emphasize prevention as well as treatment.

* Statistics Canada, National Population Health Surveys (1994-95 to 1998-99), Canadian Community Health Survey – Cycle 1.1 – 2000/2001.

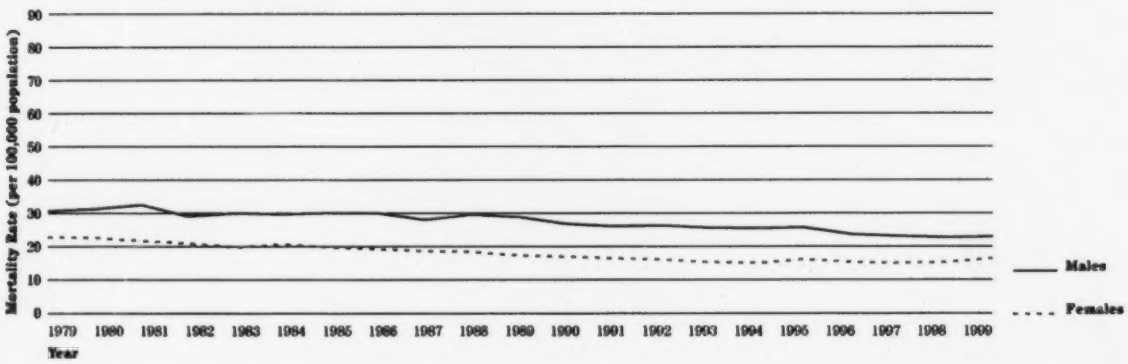
Lung Cancer Mortality Rate in Ontario Over Time – 1979 to 1999



Source: Statistics Canada, Vital Statistics, and Demography Division[37, 38]

Colorectal cancer is the second most frequent cause of cancer-related deaths for both genders combined. However, the mortality rates for colorectal cancer for both men and women are declining. The specific reasons for the decline remain the subject of research. Lifestyle changes in, for example, diet may have contributed to declining mortality. The availability of screening tests may also have had an impact.

Colorectal Cancer Mortality Rate in Ontario Over Time – 1979 to 1999



Source: Statistics Canada, Vital Statistics, and Demography Division[39, 40]

[37] For events in the years 1990–1995 however, it was not possible to completely edit vital statistics data reported by Ontario. Invalid codes were changed to the "not stated" category, and unlikely situations were accepted as reported.

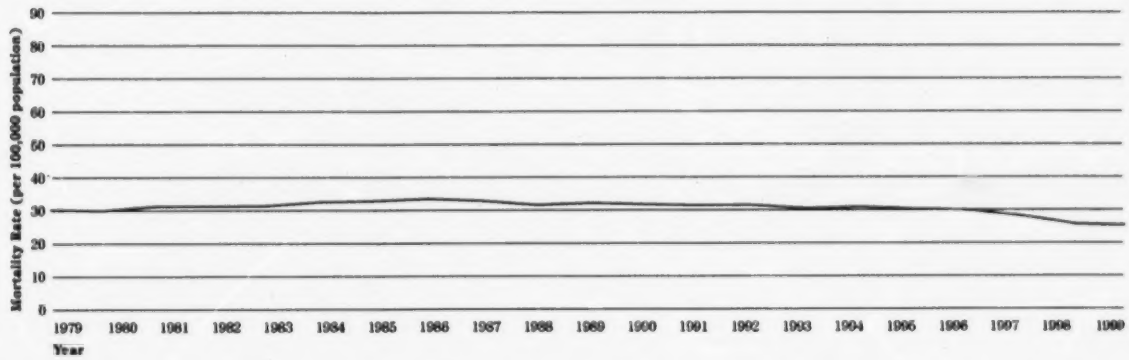
[38] There is thought to be some under-reporting and/or late reporting of deaths in remote areas.

[39] For events in the years 1990–1995 however, it was not possible to completely edit vital statistics data reported by Ontario. Invalid codes were changed to the "not stated" category, and unlikely situations were accepted as reported.

[40] There is thought to be some under-reporting and/or late reporting of deaths in remote areas.

Among women, *breast cancer* is now the second leading cause of cancer-related deaths in Ontario. However, since 1990, breast cancer mortality rates have declined steadily. This decline may be related to improved treatment options and the benefits of earlier detection. Although primary risk factors for breast cancer appear to be reproductive patterns and family history, poor diet and lack of exercise may also play a role. Further research is underway to confirm the role and influence of lifestyle factors in breast cancer.

Female Breast Cancer Mortality Rate in Ontario Over Time – 1979 to 1999



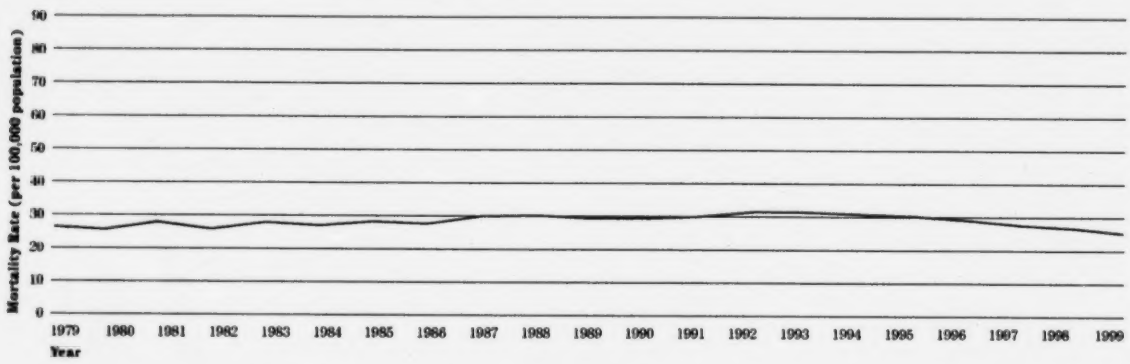
Source: Statistics Canada, Vital Statistics, and Demography Division[41, 42]

[41] For events in the years 1990–1995 however, it was not possible to completely edit vital statistics data reported by Ontario. Invalid codes were changed to the "not stated" category, and unlikely situations were accepted as reported.

[42] There is thought to be some under-reporting and/or late reporting of deaths in remote areas.

Among men, *prostate cancer* is now the second leading cause of cancer-related deaths in Ontario. Age is the primary contributing factor for prostate cancer.

Male Prostate Cancer Mortality Rate in Ontario Over Time – 1979 to 1999



Source: Statistics Canada, Vital Statistics, and Demography Division[43, 44]

[43] For events in the years 1990–1995 however, it was not possible to completely edit vital statistics data reported by Ontario. Invalid codes were changed to the "not stated" category, and unlikely situations were accepted as reported.

[44] There is thought to be some under-reporting and/or late reporting of deaths in remote areas.

Health Services that Influence Cancer Mortality Rates

Ontario recognizes the need to anticipate cancer treatment demands and ensure that both the physical capacity and human resources are available to provide quality care. The Ministry of Health and Long-Term Care and its healthcare providers are working to improve prevention, early detection, and treatment, and reduce cancer mortality.

- Since 1995, the Ontario government has increased funding for cancer care by more than $177 million. In 2002, the government also committed $141 million to construct five new regional cancer centres, and $86 million to expand six existing centres. The Ministry also announced $40 million for new therapies and treatment techniques, $30 million to modernize and upgrade cancer radiation equipment, and $50 million over three years to enhance the *Ontario Cancer Research Network*. *Cancer Care Ontario* (CCO) serves as the government's principal advisor on cancer issues and is responsible for planning all aspects of Ontario's cancer care system. CCO sets direction and provides leadership for a broad range of services including prevention, treatment, supportive care, and research. It leads the development of provincial standards for care, including treatment guidelines and care maps.
- The *Ontario Tobacco Strategy* plays a vital role in promoting smoking prevention and other related activities. Smoking is a key risk factor for lung cancer. In 2000/2001 the Ministry increased its funding for anti-tobacco initiatives from $9 million to $19 million. This includes $1.0 million to the Canadian Cancer Society (Ontario Division) to establish *The Smoker's Helpline*.
- In 2000/2001, the Ministry expanded the *Ontario Breast Screening* program so all women aged 50 and over could have better access to breast screening. The program opened 18 new sites for a total of 72 across the province, and achieved a 22% increase in the number of women screened.
- Screening tests for colorectal cancers are now available to all Ontario citizens through their family physician, and the Ministry is working with Cancer Care Ontario to develop and implement a pilot project for colorectal cancer screening.
- In 2000/2001, Ontario launched a new province-wide program to provide eligible people with genetic screening for breast, ovarian, and colon cancer.

5aii. Age-Standardized Mortality Rate for Acute Myocardial Infarction (AMI)

Overview

Cardiovascular disease remains the number one cause of death among Ontarians, with most cardiovascular disease mortality attributable to acute myocardial infarction (AMI).[45] The economic burden of cardiovascular disease on society is also severe. Cardiovascular disease costs Ontario an estimated $5.5 billion per year (roughly 2% of provincial GDP).[46] Some of the risk factors for AMI include hypertension, diabetes control, smoking, a Body Mass Index (BMI) greater then 27, a diet with greater than 30% of calories coming from fat, and a sedentary lifestyle.[47]

AMI Mortality Rates in Ontario

Ontario's AMI mortality rates have been declining steadily since 1979. However, as Ontario's population grows and ages, the number of deaths from cardiovascular disease is expected to increase, doubling by 2018.

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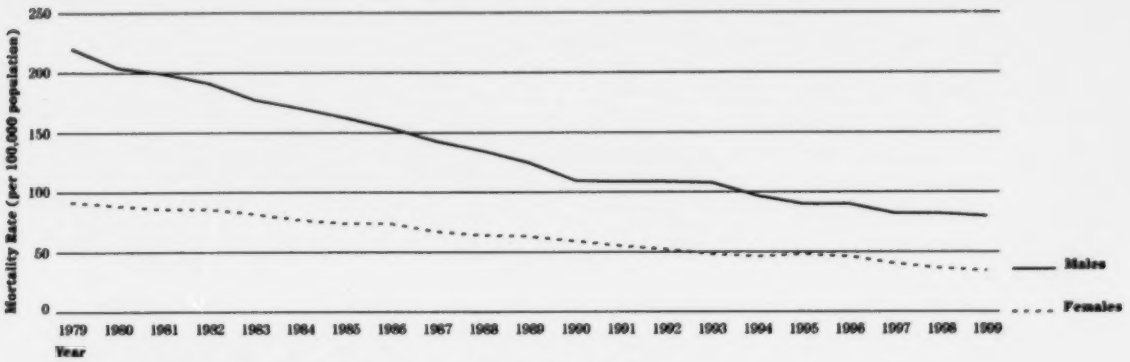
[45] Acute Myocardial Infarction, commonly known as a heart attack, is a condition that results from decreased or blocked blood flow to the heart.

[46] C. David Naylor and Pam Slaughter, *Cardiovascular Health & Services in Ontario: An ICES Atlas*. February, 1999.

[47] Institute for Clinical Evaluative Sciences, *The 'Heart' of Ontario: The Where and Why and Who of Cardiovascular Disease*, March 1999.

Acute Myocardial Infarction Mortality Rate in Ontario Over Time – 1979 to 1999



Source: Statistics Canada, Vital Statistics, and Demography Division[48, 49]

The incidence and prevalence of cardiovascular disease varies across the province. Northern Ontario has a 50% higher prevalence of cardiovascular disease than Central West or Central East Ontario.[50] About 30% of the regional variation in heart disease rates and cardiovascular death rates in Ontario can be attributed to different levels of modifiable risk factors, such as smoking, body mass, hypertension and diabetes control.[51]

Health Services that Influence AMI Mortality Rates

Ontario has initiated a variety of programs to help improve health outcomes for people with or before AMI:

- Improvements to both diagnostic and interventional cardiac treatments are underway.
- In addition to a multi-year expansion plan for cardiac care, Ontario has provided dedicated funding to a five-year *Heart Health* program to address risk factors which lead to cardiovascular disease.
- Ontario is aware of the importance of health promotion, and is working to promote heart health through positive lifestyle choices, particularly among those identified as high-risk. In 2000/2001, the Province increased its funding of anti-smoking initiatives from $9 million to $19 million, including $1 million to establish the Canadian Cancer Society (Ontario Division) Smokers' Helpline, a province-wide toll-free telephone service to help people quit smoking. Diabetes received an addition $7 million investment to expand education programs province-wide, with over 100 such programs now in operation. The diabetes strategy focuses on the promotion of self-care and preventing complications, including AMI, for the more than 600,000 people with diabetes in Ontario.

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[48] For events in the years 1990–1995 however, it was not possible to completely edit vital statistics data reported by Ontario. Invalid codes were changed to the "not stated" category, and unlikely situations were accepted as reported.

[49] There is thought to be some under-reporting and/or late reporting of deaths in remote areas.

[50] The Institute for Clinical Evaluative Sciences, *The 'Heart' of Ontario – The Where and Why and Who of Cardiovascular Disease.* March, 1999.

[51] Ibid.

5aiii. Age-Standardized Mortality Rate for Stroke

Overview

Stroke is a leading cause of death and neurological disability in Ontario,[52] and one of the reasons why elderly people are transferred into long-term care. In 2000, at least 90,000 Ontarians were living with the effects of stroke, which include motor, sensory, and cognitive/communication deficits.[53]

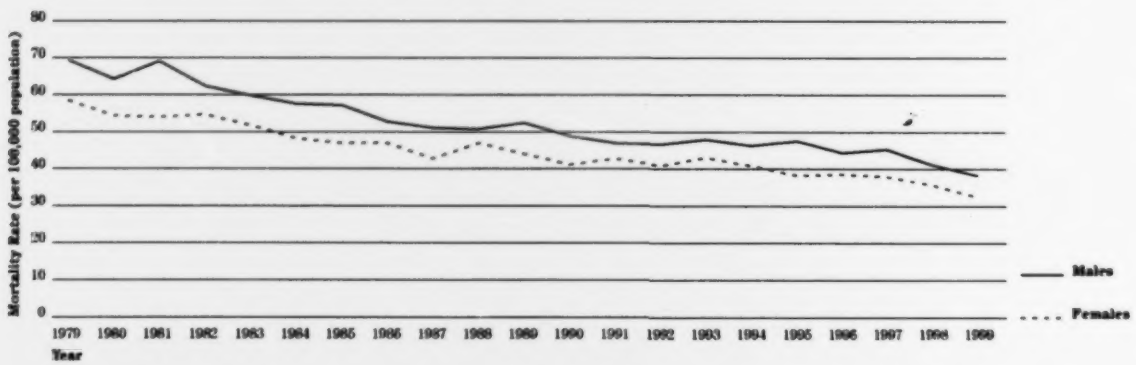
Stroke is also a serious economic burden. The economic cost of stroke to the Ontario economy is estimated to be about $857 million a year, ranging from a low of $719 million to a high of $964 million. Although the majority of stroke survivors return to the community, up to 87% are left with some form of restriction in the activities of everyday life.[54]

In some cases, stroke may be preventable. With changes in lifestyle, such as not smoking, more physical activity and good nutrition, Ontarians can significantly reduce their risk of stroke. For people at high risk of stroke, the number of strokes can be cut in half by such interventions as blood pressure lowering medications, antiplatelet or anticoagulant drugs (blood thinners), or surgery such as carotid endarterectomy, a procedure used to remove a blockage in the carotid artery.[55]

Stroke Mortality Rates in Ontario

As this graph illustrates, Ontario's stroke mortality rates have been declining relatively steadily for the past 20 years. This is due largely to improvements in stroke treatments. However, despite the progress that has been made, as our population grows and ages, the number of people who suffer strokes is expected to increase.

Stroke Mortality Rate in Ontario Over Time – 1979 to 1999



Source: Statistics Canada, Vital Statistics, and Demography Division[56,57]

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[52] Corinne Hodgson and Kathleen Whelan, *Are Physicians Ready for Thrombolysis for Acute Stroke? A Qualitative Study*. Canadian Medical Association Journal, September 22, 1998.

[53] *Towards an Integrated Stroke Strategy for Ontario: Report of the Joint Stroke Strategy Working Group*, Ministry of Health and Long-term Care, June 2000.

[54] Ibid.

[55] Ibid.

[56] For events in the years 1990–1995 however, it was not possible to completely edit vital statistics data reported by Ontario. Invalid codes were changed to the "not stated" category, and unlikely situations were accepted as reported.

[57] There is thought to be some under-reporting and/or late reporting of deaths in remote areas.

Health Services that Influence Stroke Mortality Rates

The Ministry of Health and Long-Term Care has implemented a comprehensive strategy to prevent stroke and rehabilitate stroke victims.

- The Ministry is providing up to $30 million annually to improve the stroke system, including funding for regional stroke centers across Ontario. Nine *Regional Stroke Centres* and seven *District Stroke Centres* have been designated. Together, these centres will provide high quality, appropriate care to stroke patients in a timely manner.
- Ontario is investing in *an enhanced rehabilitation system* for stroke survivors. The Ministry is funding six stroke rehabilitation pilot projects throughout Ontario.
- The Ministry is also providing funding for stroke prevention services throughout Ontario.
- The Ministry is funding five *Secondary Stroke Prevention Clinics* to help prevent strokes among high risk patients.

Related Indicators

5b. 5-Year Age-Standardized Relative Survival Rates for Lung, Prostate, Breast and Colorectal Cancer
7a. Age-Standardized Incidence Rates for Lung, Prostate, Breast and Colorectal Cancer
7b. Potential Years of Life Lost Due to Lung, Prostate, Breast, and Colorectal Cancer, AMI, Stroke, Suicide, and Unintentional Injury
7d. Prevalence of Diabetes
13e. Exposure to Environmental Tobacco Smoke
14a. Percent Teenaged Smokers
14b. Physical Activity
14c. Body Mass Index

5b. 5-Year Age-Standardized Relative Survival Rates for Lung, Prostate, Breast and Colorectal Cancer

Overview

Relative survival rate is the most widely used method for analyzing the survival of patients in population studies. It provides valuable information on the likelihood of mortality of those diagnosed with different health conditions. Given that the risk of developing cancer increases markedly in people over age 65, Ontario – with its aging population can anticipate an increase in the number of new cancer cases diagnosed each year. Because of this, the capacity to monitor survival trends and identify areas of concern is extremely important.

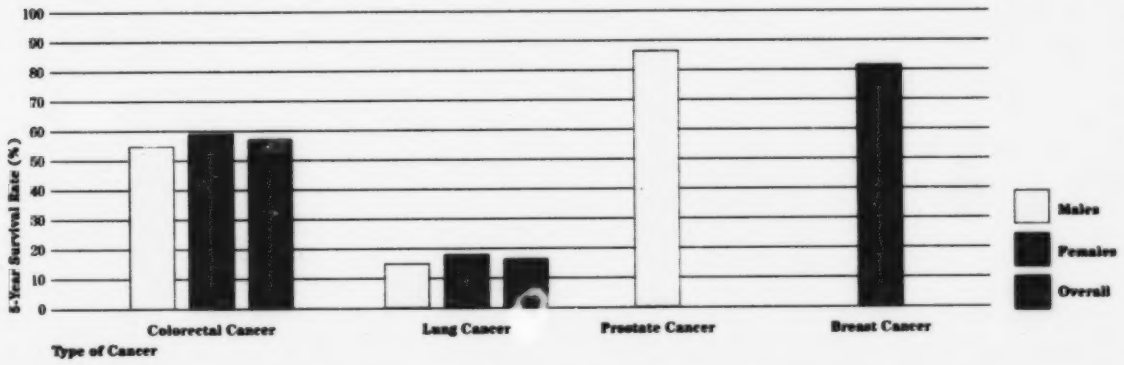
The relative survival rate for cancer is influenced by two distinct factors: (1) the severity or stage of the cancer at the time of diagnosis, and (2) the effectiveness of cancer treatment after diagnosis. For example, an improvement in screening should result in cancers being detected at an earlier stage, when treatments are usually more successful. This should lead, in turn, to an increase in 5-year survival rates. On the other hand, if there is an increase in survival rates with no significant change in screening or early detection, then the improvement would be due to more effective treatments. If the healthcare system can improve both early detection and treatment programs, it is likely to have the greatest possible impact on survival rates.

This indicator was used to examine the 5-year age-standardized relative survival rates for the four most common forms of cancer afflicting Ontarians: lung, prostate, breast and colorectal cancer. The rates are calculated as the ratio of the observed survival in people diagnosed with a specific type of cancer five years after diagnosis, and the expected survival had those individuals not had cancer and been subject only to the mortality rates of the general population with similar characteristics, such as age, sex, and geographic place of residence.[58]

Cancer Survival Rates in Ontario

Ontario's 5-year relative survival rates vary by the type of cancer. They are highest for men with prostate cancer (86%),[59] followed by women with breast cancer (82%), and individuals with colorectal cancer (55% for men and 59% for women). Survival rates are lowest for people with lung cancer (15% for men and 18% for women). Current treatments do not appear to have a significant impact on survival. The poor prognosis for lung cancer underscores the need for effective prevention strategies. Ontario is looking at the full range of ways to potentially increase survival rates.

Ontario Males vs Females 5-Year Survival Rate for Cancer – 1997



Source: Statistics Canada, Canadian Cancer Registry, Vital Statistics Death Database, Census (1990-1992)[60, 61]

With certain types of cancer, survival rates can vary significantly by age. Despite high overall 5-year survival rates for people with prostate and breast cancer, men and women in the youngest and oldest age groups had the poorest prognosis for survival.

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[58] For purposes of calculation, data was restricted to cases diagnosed in 1992 that were the first primary cancer for the individual. Subjects with an unknown year of birth or death or who were younger than 15 or older than 99 at diagnosis were excluded from the sample, as were individuals diagnosed through autopsy or death certificates alone.

[59] Variations in the use of prostate cancer screening (prostate specific antigen or PSA testing) have affected incidence rates of prostate cancer over the past ten years, and this may have a yet to be determined impact on survival rates. These findings are based on survival data starting from 1992, just at the beginning of widespread PSA testing.

[60] For events in the years 1990-1995 however, it was not possible to completely edit vital statistics data reported by Ontario. Invalid codes were changed to the "not stated" category, and unlikely situations were accepted as reported.

[61] There is thought to be some under-reporting and/or late reporting of deaths in remote areas.

Health Services to Improve Ability to Monitor Cancer Survival Rates

Ontario's ability to understand survival rates and the factors that affect them depends on access to detailed information.

- Ontario's *Cancer Care Programs* are working with *The Canadian Cancer Registry* to include in its databases staging information that will indicate how advanced a cancer is at the time of diagnosis. This information will be incorporated into future reports to make the measures more meaningful and strengthen the interpretation of findings over time.

Related Indicators

5a. Age-Standardized Mortality Rates for Lung, Prostate, Breast, and Colorectal Cancer, Acute Myocardial Infarction (AMI) and Stroke
7a. Age-Standardized Incidence Rates for Lung, Prostate, Breast, and Colorectal Cancer
7b. Potential Years of Life Lost Due to Lung, Prostate, Breast, and Colorectal Cancer, AMI, Stroke, Suicide, and Unintentional Injury
7d. Prevalence of Diabetes
13e. Exposure to Environmental Tobacco Smoke
14a. Percent Teenaged Smokers
14b. Physical Activity
14c. Body Mass Index

5c. 30-Day Acute Myocardial Infarction In-Hospital Mortality Rate

Overview

Although acute myocardial infarction (AMI) is one of the leading causes of death in Canada, the healthcare system has effective strategies to treat and prevent AMI. By tracking the 30-day AMI in-hospital mortality rate, the healthcare system can assess the quality and effectiveness of AMI treatment and care. This rate also provides an effective way to determine the number of people who survive AMI, and the number who do not. The 30-day mortality rate correlates closely with total mortality during the period following AMI.

Interpreting trends in the 30-day mortality rate is complex. Ontario is a province with a large number of adults reaching middle and old age who, because of their age, are at increasing risk of AMI. An increase in 30-day AMI in-hospital mortality rates may indicate that Ontarians are not receiving appropriate and accessible treatment options, or follow up and rehabilitation, or it may simply reflect the changing demographics of the province.

The 30-day AMI in-hospital mortality measure is expressed as the risk adjusted rate of all in-hospital deaths, regardless of cause, occurring within 30 days of first admission to an acute care hospital with a diagnosis of AMI.[a]

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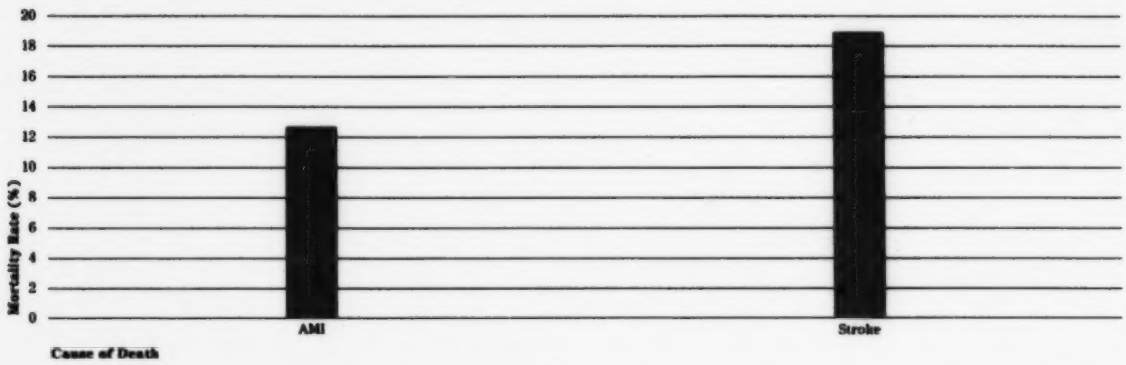
[a] For purposes of calculation, patients less than 20 years of age or greater than 105 years of age have been excluded from this sample, as have patients discharged alive with a total length of stay less than 3 days and patients transferred from another acute facility. Patients were also excluded if their records coded AMI as a complication rather than the primary diagnosis, contained an invalid health card number or were from outside Ontario.

Ontario's 30-Day AMI Mortality Rates

Over the last three years (1997/1998 to 1999/2000), Ontario's 30-day acute myocardial infarction in-hospital mortality rate has remained constant. The three-year pooled average 30-day AMI mortality rate[63] for all cases between 1997 and 1999 is 12.8%.

Ontario 30-Day Acute Myocardial Infarction vs Stroke In-Hospital Mortality Rate 1997 to 1999 3-Year Pooled Averages



Source: Hospital Morbidity Database, CIHI

Health Services that Influence the 30-day AMI In-Hospital Mortality Rates

Ontario recognizes the need to reduce 30-day mortality, and is continuing to develop healthcare services that can improve AMI survival rates.

- The Ministry has improved access to diagnostic and interventional cardiac treatments, and is implementing a multi-year expansion plan for cardiac care.
- The Ministry has initiated a cardiac rehabilitation pilot strategy.
- A five-year *Heart Health* program will address the risk factors that lead to cardiovascular disease.

Related Indicators

8a. Wait Times for Cardiac Surgery
10a. Readmission Rate for Acute Myocardial Infarction
14b. Physical Activity
14c. Body Mass Index

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[63] The three-year pooled average 30-day AMI in-hospital mortality rate is the sum of all risk-adjusted deaths within 30 days of first admission to an acute care hospital with a diagnosis of AMI, divided by the sum of all cases of AMI over the three year period, expressed as a percentage.

5d. 30-Day Stroke In-Hospital Mortality Rate

Overview

Stroke is a major cause of death and disability in the Canadian population. The 30-day risk-adjusted stroke mortality rate reflects Ontario's ability to reduce death among stroke patients. A positive change (i.e., a decrease) in the 30-day stroke mortality rate might indicate that patients are receiving better diagnosis (such as CT scans) and appropriate, timely, coordinated treatment. This measure can also be used to identify and assess variations in stroke mortality, which can be attributed to a number of factors, such as emergency treatments, quality of hospital care, primary care, prevention programs, and socioeconomic factors.

The measure is expressed as the risk-adjusted mortality rate of in-hospital deaths, regardless of cause, occurring within 30 days of admission to an acute care hospital with a diagnosis of stroke.[44]

Ontario's 30-Day Stroke In-Hospital Stroke Mortality Rate

Between 1997 and 2000, Ontario's pooled average for 30-day stroke in-hospital mortality rate was 18.9%. During this period, Ontario's 30-day stroke mortality rate dropped overall, but this decline has not been constant.

Ontario 30-Day Mortality Rates for Acute Myocardial Infarction and Stroke Over Time – 1997/1998 to 1999/2000

Source: Hospital Morbidity Database, CIHI

Health Services that Influence Stroke Mortality Rates

Ontario has taken steps to reduce stroke mortality and improve survival rates.

- The *Ontario Stroke Strategy* began in June 2000 with the goal of improving patient outcomes. Organizing stroke care has been the main priority, including: training paramedics to recognize stroke and transport patients to facilities with stroke expertise; designating regional and district stroke centres with 24 hour access to CT scanning; 24 hour on-call neurologists for CT interpretation; and 24 hour access to a stroke team to administer TpA (thrombolytic therapy for ischemic strokes).

Related Indicators

1b. Disability-Free Life Expectancy (DFLE)
5c. 30-Day Acute Myocardial Infarction In-Hospital Mortality Rate
7d. Prevalence of Diabetes
13e. Exposure to Environmental Tobacco Smoke
14a. Percent Teenaged Smokers
14b. Physical Activity
14c. Body Mass Index

[44] For purposes of calculation, patients under 20 and over 105 years of age were excluded from the sample.

6. Improved Quality of Life

Because of the limitations of existing databases, the PIRC recommended that intervention rates for joint replacements be used as surrogate markers of health-related quality of life in this report.

6a. Total Hip Replacement Rate
6b. Total Knee Replacement Rate

Overview

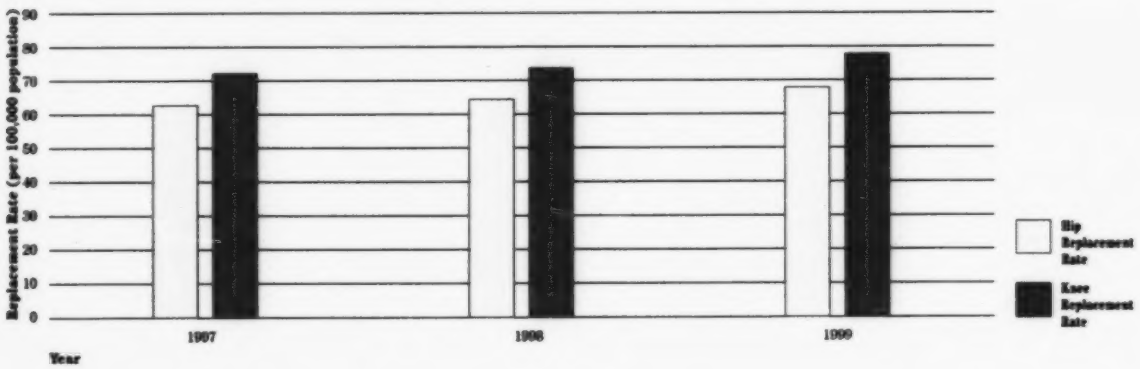
Orthopaedic disease, while generally not life threatening, accounts for a significant amount of chronic pain and joint immobility, the loss of personal independence, and loss of quality of life. Many hip and knee replacements are intended to improve quality of life.

Recent research in British Columbia examined the appropriateness of several types of elective surgery and their health-related outcomes. Over 6,200 surgical episodes were assessed. The results demonstrated that, for the majority of patients receiving one of six different elective procedures including hip and knee replacement, health-related quality of life improved significantly. Over 94% of those who received a hip replacement reported substantial improvement in pain, stiffness, and overall functioning as reflected in the Short-Form-36 Health Survey and the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC).[65] Hip and knee replacement rates are defined as the age standardized rate of total unilateral or bilateral hip or knee replacement surgery performed on in-patients in acute care hospitals.[66]

Ontario's Hip and Knee Replacement Rates

Between 1997 and 1999, Ontario's hip and knee replacement rates increased steadily each year. The need for hip and knee replacements is a function of age. With its growing and aging population, Ontario is likely to experience an increase in orthopedic ailments, and increasing pressure for new technology and more aggressive treatment to treat joint problems.

Ontario Total Hip and Knee Replacement Rates Over Time – 1997 to 1999



Source: Hospital Morbidity Database, CIHI. Canada Census, Statistics Canada

[65] Charles J. Wright and Yoel Robens-Paradise, Centre for Clinical Epidemiology and Evaluation, Vancouver Hospital and Health Services Centre, *Evaluation of Indications and Outcomes in Elective Surgery*. May 2001.

[66] For purposes of calculation, patients not treated as in-patients in acute hospitals and those who received their surgery prior to admission were excluded from the sample.

Health Services that Influence Hip and Knee Replacements

Ontario recognizes the growing demand for orthopedic treatments and is responding to this increasingly pervasive clinical condition.

- Since 1999/2000, 543 new rehabilitation beds have been opened in Ontario, and another 564 beds will be added over the next four years. This is a first step in reforming our rehabilitation system to ensure that patients receive appropriate rehabilitation services in a timely manner.
- In 2001/2002, the Ministry created the *Ontario Joint Replacement Registry* (OJRR), a technical centre responsible for collecting and validating data on joint replacement surgery in Ontario. The Registry's mandate is to improve the quality of surgery through evidence-based practice. The OJRR's vision is that at least 95% of patients receive surgery within a 4-month waiting period, and receive a device that will last for at least 10 years. To reach these goals, the OJRR aims to generate timely, relevant data on all hip and knee joint replacement procedures, and provide information on access and quality of care.
- From 1999/2000 to 2001/2002, Ontario funded the installation of approximately 4,100 additional joint replacement devices for a total of approximately 21,300 joint replacement devices.

Related Indicators

1b. Disability-Free Life Expectancy (DFLE)
4. Self-Reported Health
14b. Physical Activity

7. Reduced Burden of Disease, Illness, and Injury

One major indicator of healthcare outcome is the burden of diseases and illnesses placed on the public at large. Health systems can play a large role in reducing this burden, and improving quality of life. For this indicator, the PIRC chose a number of measures of particular interest to the public, including:

(a) incidence rates for lung, prostate, breast and colorectal cancer;

(b) potential years of life lost due to lung, prostate, breast, and colorectal cancer, acute myocardial infarction (AMI), stroke, unintentional injury, and suicide;

(c) incidence rates of vaccine-preventable diseases, including invasive meningococcal disease, measles and haemophilus influenza b; and

(d) the incidence and prevalence of diabetes.

7a. Age-Standardized Incidence Rates for Lung, Prostate, Breast, and Colorectal Cancer

Overview

While mortality rates and survival rates tell us about the number of people who die from cancer each year or who survive for a period of time, incidence rates tell us how many new people are developing cancer. The healthcare system uses age-standardized incidence rates to determine whether an illness like cancer is creating a greater or lesser burden of illness. When incidence rates rise, this means more new cases and more demand for treatment services. When they decline, it means fewer cases and less need for services.

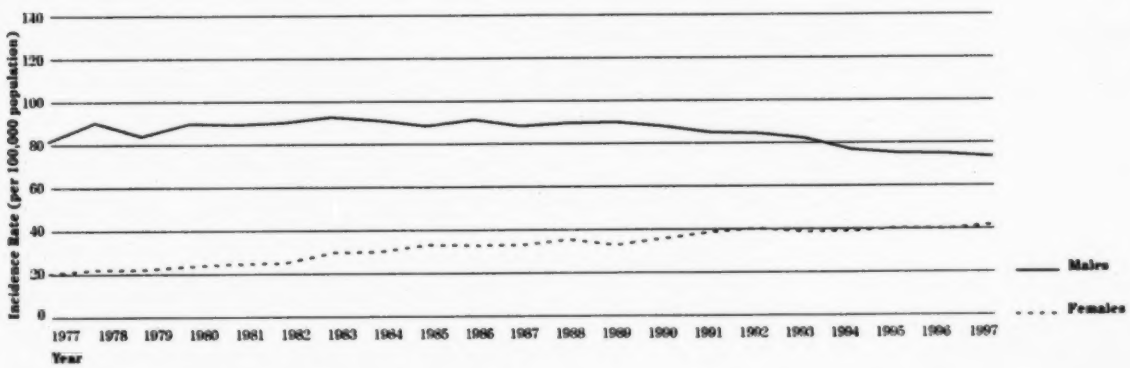
Age-standardized incidence rates are influenced by two main factors: (1) the underlying rate of cancer incidence in the population, which in turn reflects the prevalence of risk factors such as smoking and/or, the success of primary prevention efforts; and (2) the rate of detection and diagnosis of cancers which can, in turn, be influenced by the intensity and effectiveness of cancer screening programs. These two factors interact in a complex way, and can make it difficult to interpret incidence rates. For example, an increase in cancer incidence could reflect either a deterioration in healthy life style or an improvement in screening. However, conventional wisdom suggests that screening improvements would only increase measured incidence for a short period of time. A sustained drop in cancer incidence over time is likely to reflect an improvement in population health.

The age-standardized incidence rate of cancer is defined as the number of newly diagnosed primary cancer cases (by site) in a given year per 100,000 population, which would have occurred in the standard population if the actual age-specific rates observed in a given population had occurred.[67]

Ontario's Cancer Incidence Rates

Over the last 20 years, Ontario's incidence rate of *lung cancer* has been dropping in males, and increasing in females. Despite this trend, women still have a much lower incidence rate than men. As of 1997, Ontario's lung cancer incidence rate was 40.8 for women and 72.7 for men.

Ontario Incidence Rate of Lung Cancer in Males and Females Over Time – 1977 to 1997

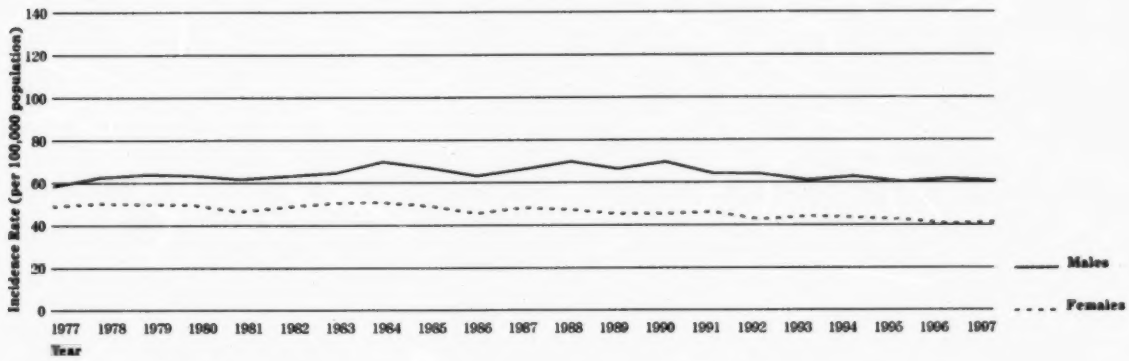


Source: Statistics Canada, Canadian Cancer Registry, and Demography Division (census population estimates)

[67] For purposes of calculation, non-residents of Canada have been excluded from the sample.

Over the last 20 years, Ontario's *colorectal cancer* incidence rate has remained relatively constant in men, and declined in women. As of 1997, Ontario's rate of colorectal cancer was 60.6 in men and 41.0 in women. The specific reasons for the decline remain a subject for research; however, lifestyle changes such as diet, may be a contributing factor.

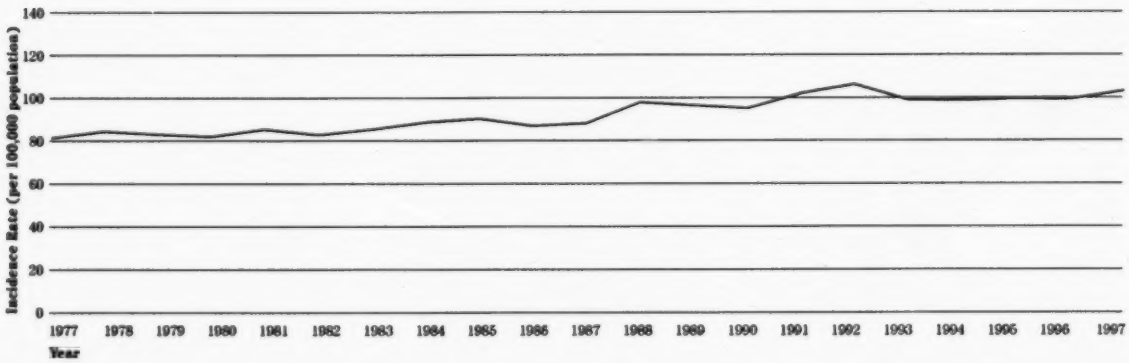
Ontario Incidence of Colorectal Cancer in Males and Females Over Time – 1977 to 1997



Source: Statistics Canada, Canadian Cancer Registry, and Demography Division (census population estimates)

Between 1977 and 1997, breast cancer incidence rates increased gradually. In 1997, Ontario's incidence rate for breast cancer stood at 103.1 per 100,000. Research is underway to determine the significance and relative impact of screening, improved treatment, and changes in risk factors on the breast cancer incidence rate.

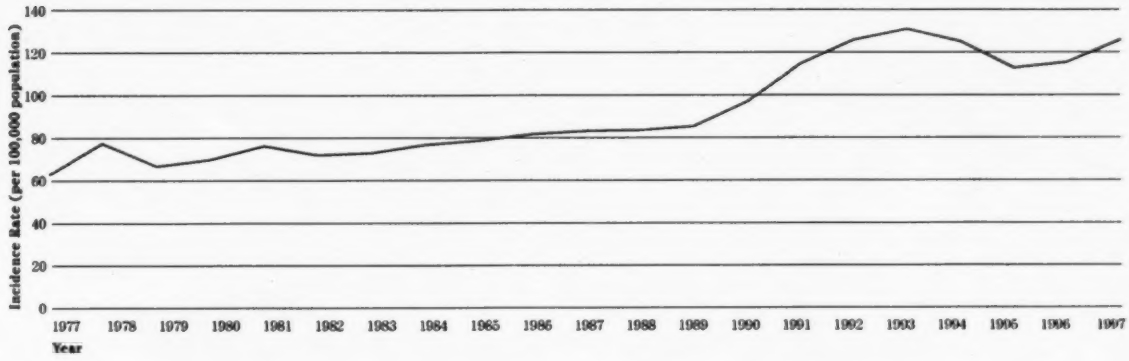
Ontario Incidence of Breast Cancer in Females Over Time – 1977 to 1997



Source: Statistics Canada, Canadian Cancer Registry, and Demography Division (census population estimates)

Between 1977 and 1994, Ontario's *prostate cancer* incidence rates rose steadily. Since then, the rates declined, and then recently started to rise again. The increase in the late 1980s and early 1990s appears to be due to the introduction of techniques for early detection. The subsequent decrease may have reflected the resulting reduction in the pool of prevalent cancer in the population. In 1997, Ontario's incidence rate was 125.8 per 100,000 population.

Ontario Incidence of Prostate Cancer in Males Over Time – 1977 to 1997



Source: Statistics Canada, Canadian Cancer Registry, and Demography Division (census population estimates)

Health Services that Influence Cancer Incidence Rates

Cancer is a disease of aging. As Ontario's population grows and ages, an increasing number of new cancer cases are likely to be diagnosed over time. Ontario is taking steps to anticipate needs and respond to treatment demand. In addition to the initiatives listed under indicator 5a, these steps include the following:

- A Cancer Human Resources Committee made up of employers, professional staff, educational bodies, and chaired by the Ministry of Health and Long-Term Care is working to ensure that there are human resources in place to provide quality cancer care across the province. Since 1999, Ontario has increased its cancer workforce by 122 radiation therapists, 11 medical physicists, 33 radiation oncologists and 10 medical oncologists.
- In 1997, the Ministry of Health and Long- Term Care expanded the mandate of its provincial agency, *Cancer Care Ontario* (CCO), to provide leadership in primary prevention and to develop standards and guidelines for consistent, high quality, accessible care all across Ontario.
- A number of existing initiatives are designed to reduce smoking, a key risk factor for lung cancer, such as anti-smoking media campaigns, education, and health and prevention/promotion programs. The renewed *Ontario Tobacco Strategy* has been in place since 1999. Preliminary evaluation results are encouraging and similar initiatives in other jurisdictions have had dramatic effects over the long term. However, Ontario is unlikely to see the significant impact of these efforts (i.e., drops in smoking prevalence rates) for another 7 to 10 years.
- Low taxation and cigarette prices are significant factors in cigarette consumption, particularly by price sensitive youth. According to research quoted in the U.S. Surgeon General's Report in 2000, for every

10% increase in price, consumption generally decreases by 4%.[68] In the June 2002 budget, Ontario introduced an additional $5 provincial tax on each carton of cigarettes sold in the province. This measure, combined with a parallel $3.50 federal tax hike, increases price by about 20% and is expected to decrease consumption by 8%.

- Screening tests for colorectal cancer are available to Ontario citizens through family physicians. While screening may lead to an increase in reported incidence rates of cancer, it should also lead to better prognosis and lower mortality rates.
- The Ministry of Health and Long-Term Care is working with *Cancer Care Ontario* to develop and implement a pilot project for colon and rectal cancer screening. As part of its effort to provide the highest level of organized screening programs, the Ministry will review the outcome of this project in light of national and international recommendations.
- The Ministry of Health and Long-Term Care currently provides funding for the *Ontario Breast Screening Program*, which targets women 50 years of age and older for biennial mammography screening.
- The Ministry of Health and Long-Term Care currently funds the use of *Prostate Specific Antigen* (PSA) testing to confirm a suspected diagnosis of prostate cancer and to monitor confirmed diagnoses of prostate cancer.

Related Indicators

1a. Life Expectancy
5a-5d. Change in Life Expectancy
7b. Potential Years of Life Lost Due to Lung, Prostate, Breast and Colorectal Cancer, AMI, Stroke, Suicide and Unintentional Injury
14a. Percent Teenaged Smokers

7b. Potential Years of Life Lost Due to Lung, Prostate, Breast, and Colorectal Cancer, AMI, Stroke, Suicide, and Unintentional Injury

The potential years of life lost (PYLL) is the number of years of life "lost" when a person dies from any cause before the age of 75. For example, someone dying at age 25 has lost 50 potential years of life. PYLL varies by gender, socio-economic status, causes of death, and geographic area. Reported as the number of years lost per 100,000 population, PYLL also reflects the loss of social and economic productivity to society as a whole.

The PYLL measure complements the life expectancy measure by focusing more on mortality among the non-elderly. The healthcare system uses this indicator to assess its effectiveness in providing treatment and preventing premature death, to determine the impact of community health initiatives, and to establish research priorities. A drop in PYLL would indicate that healthcare services and preventive measures are effective while an increase in PYLL could highlight the need to identify the contributing factors and address them.

This report provides the PYLL for four cancers, acute myocardial infarction (AMI), stroke, unintentional injury, and suicide.[69]

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[68] Department of Health and Human Services, *Reducing Tobacco Use: A Report of the Surgeon General*, 2000.

[69] In the 1970s and 1980s, Canada's PYLL measures were based on age 70. Other countries have used different age cutoffs. Any work done now on Canadian PYLL, which is based on age 75, will differ from published data on PYLL from most previous Canadian sources. Recent Ontario findings, therefore, cannot be compared with the earlier data. The choice of age 70 or 75 is arbitrary, and does not greatly affect time trends or inter-provincial comparisons.

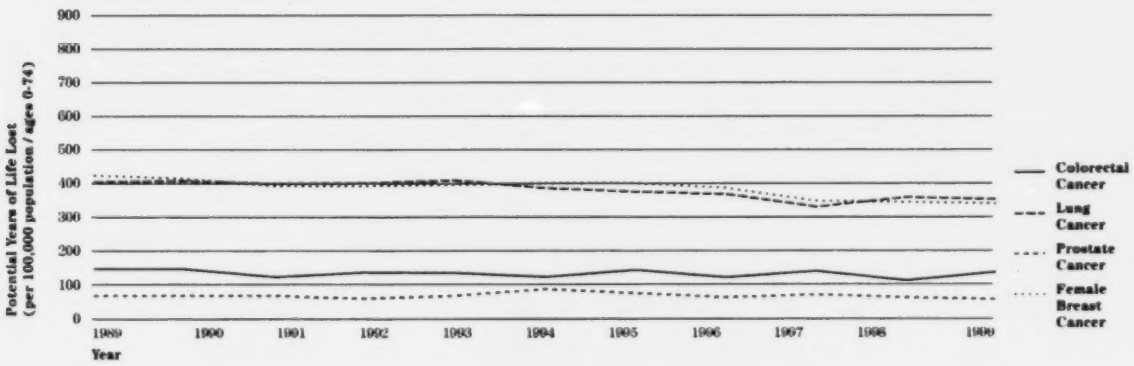
Related Indicators

1a. Life Expectancy
5a. Age-Standardized Mortality Rates for Lung, Prostate, Breast, and Colorectal Cancer, Acute Myocardial Infarction (AMI), and Stroke
5b. 5-Year Age-Standardized Relative Survival Rates for Lung, Prostate, Breast and Colorectal Cancer
7a. Age-Standardized Incidence Rates for Lung, Prostate, Breast and Colorectal Cancer

7bi. Potential Years of Life Lost Due to Lung, Breast, Prostate, and Colorectal Cancer

Between 1989 and 1999, the potential years of life lost to all these cancers in Ontario declined. The drop was most significant for breast and lung cancer, which may reflect the impact of new developments in treatment. The same impact was not apparent however in lung cancer mortality or survival rates.

Ontario Potential Years of Life Lost Due to Cancer Over Time – 1989 to 1999



Source: Statistics Canada, Vital Statistics, Death Database and Demography Division (population estimates)[70,71]

Health Services that Influence PYLL to Cancer

Ontario has taken a number of steps to decrease the PYLL to cancer.

- In 1997, the Ministry of Health and Long-Term Care expanded the mandate of *Cancer Care Ontario* (CCO). The organization is now responsible for providing leadership in primary prevention and developing standards and guidelines for consistent, high quality, accessible care all across Ontario.
- Since 1995, the Ontario government has increased funding for cancer care by more than $177 million. Since then, the government also committed $141 million to construct five new regional cancer centres and $86 million to expand six existing regional centres.
- In the 2002 Ontario Budget, the government announced that it would provide $40 million for new therapies and treatment techniques and $30 million to modernize and upgrade cancer radiation equipment.
- Ontario also announced a $50 million increase in funding over three years in the 2002 Budget to enhance the *Ontario Cancer Research Network*. This is expected to double the number of patients who can benefit from this research.

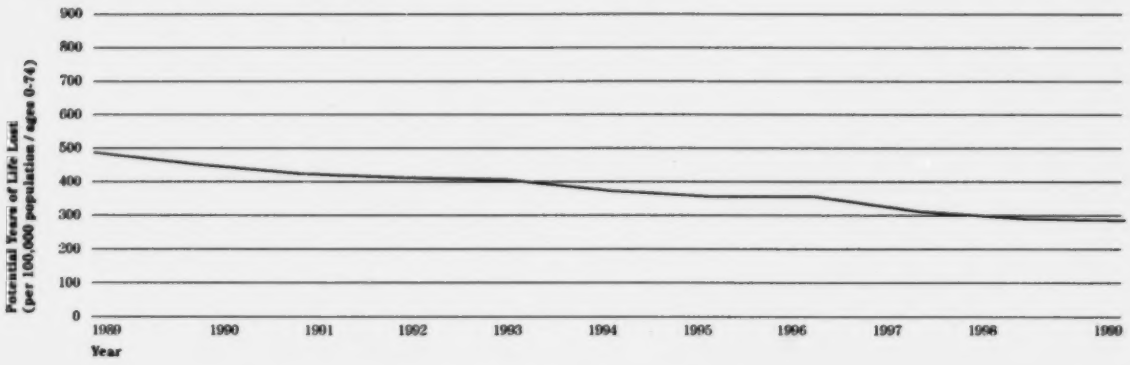
[70] For events in the years 1990–1995 however, it was not possible to completely edit vital statistics data reported by Ontario. Invalid codes were changed to the "not stated" category, and unlikely situations were accepted as reported.

[71] There is thought to be some under-reporting and/or late reporting of deaths in remote areas.

7bii. Potential Years of Life Lost Due to AMI

Over the past decade, the potential years of life lost in Ontario due to AMI has declined. This change could be due to the quality of treatment, effective health promotion, and/or an increase in healthy, active lifestyles.

Ontario Potential Years of Life Lost Due to AMI Over Time – 1989 to 1999



Source: Statistics Canada, Vital Statistics, Death Database and Demography Division (population estimates)[72,73]

Health Services that Reduce PYLL to AMI

Ontario recognizes the need to address AMI, and continues to improve prevention and treatment services.

- Many Ontario cardiac researchers participate in the Canadian Cardiovascular Outcomes Research Team (CCORT), which was established in 2001. Funded by a five-year operating grant from the Canadian Institute for Health Research Interdisciplinary Health Research Team program, CCORT consists of 25 investigators from five provinces (Nova Scotia, Quebec, Ontario, Alberta, and British Columbia) who conduct innovative studies to measure and improve the quality of care provided to Canadians. Led by a team of researchers at the Institute for Clinical and Evaluative Sciences, under the direction of Dr. Jack V. Tu, the CCORT investigators are focusing their research efforts on improving the quality of care in acute myocardial infarction (AMI) and congestive heart failure (CHF), and improving the outcomes of patients undergoing invasive cardiac procedures (cardiac catheterization, percutaneous coronary interventions, and coronary artery bypass graft surgery) in Canada. CCORT is also responsible for training and preparing the next generation of Canadian cardiac outcomes researchers.
- Smoking is a key risk factor in AMI. In 2000-2001, the Ministry increased its funding for anti-tobacco initiatives from $9 million to $19 million. This included $1 million to help the Canadian Cancer Society (Ontario Division) establish the Smokers' Helpline, a province-wide, toll-free telephone service to help people quit smoking.
- Diabetes is another key risk factor for AMI. Ontario has invested an additional $7 million to expand diabetes education programs across the province: over 100 programs are now in operation. Ontario's diabetes strategy focuses on promoting self-care and preventing complications such as AMI for the more than 600,000 people diagnosed with diabetes in the province.

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[72] For events in the years 1990-1995 however, it was not possible to completely edit vital statistics data reported by Ontario. Invalid codes were changed to the "not stated" category, and unlikely situations were accepted as reported.

[73] There is thought to be some under-reporting and/or late reporting of deaths in remote areas.

Related Indicators

5c. 30-day Acute Myocardial Infarction In-Hospital Mortality Rate
8a. Wait Times for Cardiac Surgery
10a. Re-admission Rate for Acute Myocardial Infarction
13e. Exposure to Environmental Tobacco Smoke
14a. Percent Current Teenage Smokers
14b. Physical Activity
14c. Body Mass Index

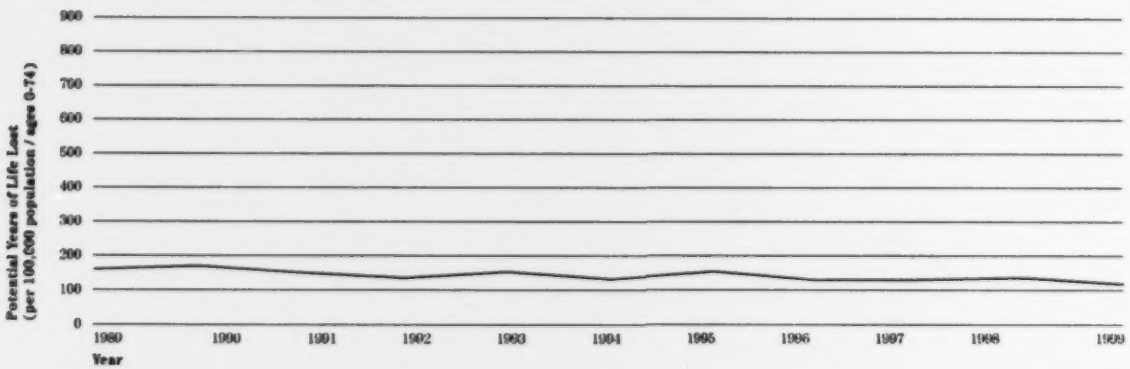
7biii. Potential Years of Life Lost Due to Stroke

Between 1989 and 1999, the potential years of life lost in Ontario to stroke declined steadily. This trend is likely due to new treatments identified by research for those who have suffered a stroke and to changes in lifestyle and other prevention strategies designed to reduce the risk of stroke (i.e., smoking cessation, good nutrition, increased physical activity, and pharmacological therapies).

Health Services that Reduce PYLL to Stroke

- In the past, it was assumed that little could be done to prevent or treat stroke. As a result, resources for expert stroke rehabilitation were limited, and minimal attention was paid to stroke prevention. With the advent of new knowledge and therapies, Ontario now has the potential to dramatically improve stroke care, and significantly reduce the PYLL due to stroke.
- In June 2000, the Ministry of Health and Long-Term Care introduced the *Ontario Stroke Strategy* with the goal of improving patient outcomes. Some of the main priorities include: training paramedics to recognize stroke and transporting patients to facilities with stroke expertise; designating regional and district stroke centres with 24 hour access to CT scanning; providing 24 hour on-call neurologists for CT interpretation; and ensuring 24 hour access to a stroke team to administer TpA (thrombolytic therapy for ischemic strokes).

Ontario Potential Years of Life Lost Due to Stroke Over Time – 1989 to 1999



Source: Statistics Canada, Vital Statistics, Death Database and Demography Division (population estimates)[74,75]

[74] For events in the years 1990-1995 however, it was not possible to completely edit vital statistics data reported by Ontario. Invalid codes were changed to the "not stated" category, and unlikely situations were accepted as reported.

[75] There is thought to be some under-reporting and/or late reporting of deaths in remote areas.

Related Indicators

5c. 30-Day Acute Myocardial Infarction In-Hospital Mortality Rate
5d. 30-Day Stroke In-Hospital Mortality Rate
7d. Prevalence of Diabetes
13e. Exposure to Environmental Tobacco Smoke
14a. Percent Teenaged Smokers
14b. Physical Activity
14c. Body Mass Index

7biv. Potential Years of Life Lost Due to Suicide

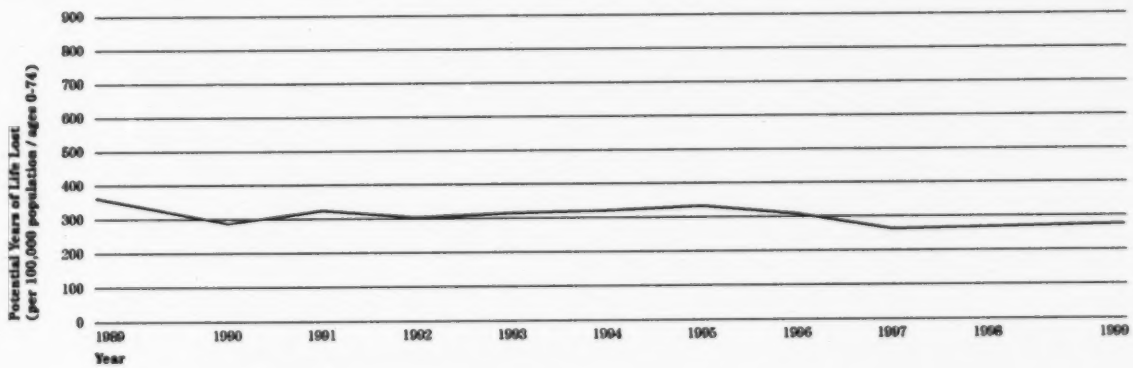
Overview

Suicide is a leading cause of death among young people 15 to 24 years of age. Suicide rates are also high among males between the ages of 30 and 54, and those over age 70. The problem is greater in certain segments of the population. For example, depression[76] and suicide rates among Aboriginal people in Ontario are above the overall provincial average. The youth suicide rate in remote northern First Nations communities is also much higher than the Ontario average. Other people at high-risk of suicide are people with a history of mental disorders, those who suffer from depression, those with substance abuse problems, adolescents struggling with sexual identity issues, and those with terminal illnesses.

Ontario's PYLL Due to Suicide

Ontario's reported cases of suicide have decreased over time, as has the PYLL due to suicide. Although some of this decline may be attributed to a new, more rigorous legal standard definition of suicide introduced in 1992, the 10 year overall trend line demonstrates that this decline predates this change.[77]

Ontario Potential Years of Life Lost Due to Suicide Over Time – 1989 to 1999



Source: Statistics Canada, Vital Statistics, Death Database and Demography Division (population estimates)[78, 79]

[76] In 1998/99, rates of major depression in the Aboriginal population were found to be more than double that of the Ontario National Population Health Survey sample rate (Source: Ontario First Nations Regional Health Survey, May 28, 1998).

[77] A July 9, 1992 Ontario Court of Appeal decision (*Beckon vs. Young, 1992*) accepted the common definition for suicide, but changed the legal standard of proof for it in Ontario.

[78] For events in the years 1990-1995 however, it was not possible to completely edit vital statistics data reported by Ontario. Invalid codes were changed to the "not stated" category, and unlikely situations were accepted as reported.

[79] There is thought to be some under-reporting and/or late reporting of deaths in remote areas.

Health Services to Address PYLL to Suicide

- Suicide is a manifestation of a person's physical and mental health. Promoting mental health and preventing and treating the conditions associated with suicide, such as major depression, substance abuse, and other mental and physical illnesses, is expected to reduce suicide-related deaths as well as the potential years of life lost to suicide. The Ministry of Health and Long-Term Care is taking a broad approach toward the prevention of suicide. The Ministry of Health and Long-Term Care has developed a plan for mental health reform, ***Making it Happen***, which is based on best practices in mental health, and designed to provide a comprehensive, balanced, effective, and integrated system of community services.
- The Ministry is investing funds in Assertive Community Treatment (ACT) teams and Community Treatment Orders (CTOs), intensive case management, crisis services, housing supports, and consumer/survivor alternative supports.
- Between 1996 and 2001, funding for counseling, case management, and psychogeriatric programs more than doubled. A large proportion of the increase in counseling can be attributed to the addition of ACT teams.
- Ontario has also implemented a series of initiatives targeted to assist Aboriginal communities in need, and to address the higher rates of suicide in Aboriginal communities, including the Intergovernmental Committee on Youth Suicide, programs and services through the ***Aboriginal Healing and Wellness Strategy***, and the Suicide Prevention Working Group.
- MOHLTC addiction programs are also addressing suicide through the provision of substance abuse and problem gambling treatment services across the province. In addition to the services in hospitals, approximately 150 agencies provide substance abuse treatment, including 44 that provide treatment for problem gambling. Treatment services range from withdrawal management services to non-residential counseling and residential treatment.

7bv. Potential Years of Life Lost Due to Unintentional Injuries

Overview

More than 2,000 people are injured in Ontario every day, resulting in over $1.5 billion in direct healthcare costs.[80] Although many Ontarians believe unintentional injuries are inevitable, accidents are often predictable and preventable. The burden of accidents and injuries can be measured in social costs, economic (productivity) costs, morbidity, mortality, loss of quality of life, and potential years of life lost. Some of the most financially costly unintentional injuries are: automobile accidents, falls, burns, poisonings, drowning, and suffocation. Unintentional injury is currently the fourth leading cause of hospitalization in Ontario.[81]

PYLL to Unintentional Injuries in Ontario

Over the last 10 years, the PYLL in Ontario due to unintentional injury has been declining overall.

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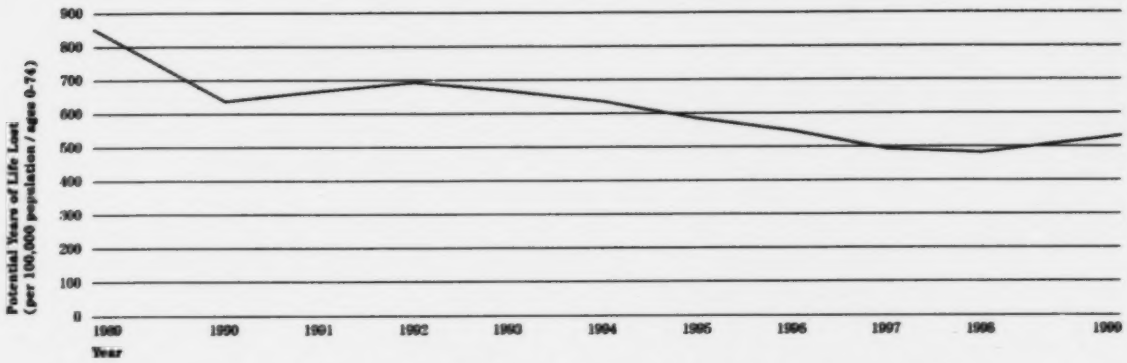
[80] The SMARTRISK Foundation, *The Economic Burden of Unintentional Injury in Ontario*, December, 1999.

[81] Ibid.

Ontario Potential Years of Life Lost Due to Unintentional Injuries Over Time – 1989 to 1999



Source: Statistics Canada, Vital Statistics, Death Database and Demography Division (population estimates)[83]

Health Services that Influence PYLL to Unintentional Injuries

The Ministry of Health and Long-Term Care is committed to reducing unintentional injuries.

- In 1999, the Ministry of Health and Long-Term Care formed a partnership with the SMARTRISK Foundation to advance injury prevention initiatives in Ontario. This initiative will expand the collective understanding of injuries and their impact, and will bring injury prevention practitioners together to plan future programs.
- *The Ontario FOCUS Community Program* is designed to reduce alcohol and drug use and related injuries, with a specific focus on youth.

7c. Incidence Rates of Vaccine-Preventable Diseases

7ci. Invasive Meningococcal Disease Incidence Rate

Overview

Invasive meningococcal disease (IMD) for persons under 20 years of age is a rare but serious bacterial disease which is spread by direct contact, including contact with respiratory droplets from the nose and throat of infected people. IMD has a high fatality rate. Roughly 10% of people who contract IMD will die, while those who survive may suffer serious after-effects, such as limb amputations, and require ongoing medical care or surgeries.[84] Although IMD can affect people of any age, its incidence is highest among children under age one, and those between the ages of 15 and 19.[85]

Highly effective vaccines are now available against Group C IMD and can be given to infants as young as two months of age. The National Advisory Committee on Immunization (NACI) recommends that children be given three doses of vaccine at two, four and six months of age. While there is no immunization for serotype B, other strains of IMD, such as A, Y, and W-135 are also preventable by immunization. The healthcare system uses IMD incidence rates to provide a measure of new cases, to detect trends and potential outbreaks, and to guide appropriate control measures. Its goal is to reduce the rate of IMD, and thereby reduce the high costs of hospitalization and treatment associated with this disease. Lower rates of IMD could also decrease the incidence of serious after-effects and improve the overall health of Ontarians.

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[83] For events in the years 1990–1995 however, it was not possible to completely edit vital statistics data reported by Ontario. Invalid codes were changed to the "not stated" category, and unlikely situations were accepted as reported.

[84] There is thought to be some under-reporting and/or late reporting of deaths in remote areas.

[84] Health Canada Information Sheets, *Invasive Meningococcal Disease*, April, 2001.

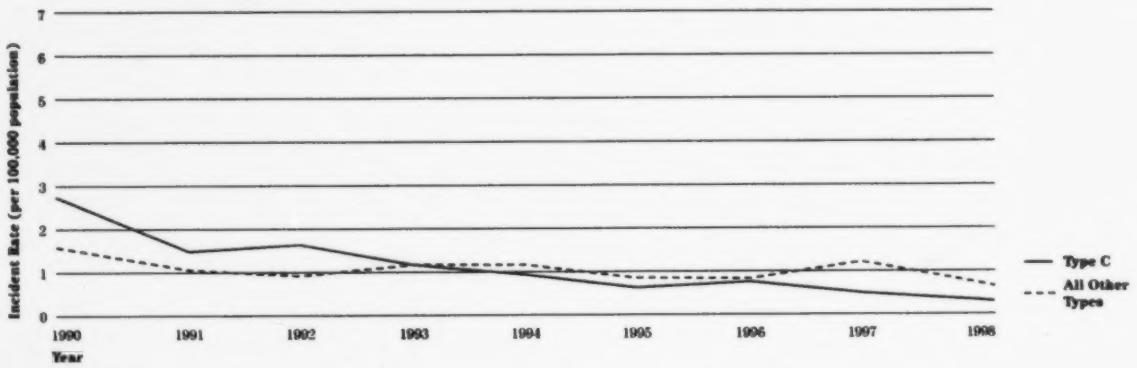
[85] Ibid.

The incidence rate of invasive meningococcal disease (IMD) is defined as the rate of new cases reported in a given year for persons under 20 years of age, expressed per 100,000 population. A case is confirmed by laboratory assessment, either by isolating the bacteria which causes IMD, *Neisseria meningitidis*, from a sterile site (such as blood or cerebrospinal fluid), or demonstrating *N. meningitidis* antigen in cerebrospinal fluid.

Ontario's IMD Incidence Rate

Over the last ten years, the incidence rates of both Group C IMD and all other types of IMD combined have been declining in Ontario. This is likely due to the cyclical nature of the disease, successful targeted vaccination campaigns conducted during outbreaks, and public education.

Ontario Incidental Rate of Invasive Meningococcal Disease Over Time – 1990 to 1998



Source: Notifiable disease reporting and enhanced surveillance system, Health Canada
Note: Due to unavailability of data for 1999, it was not possible to present a ten-year time period

Health Services that Influence IMD Incidence Rates

- Ontario has established public health policies and procedures designed to reduce the incidence of IMD.
- When a case is reported to a health unit, the public health units immediately notify close contacts, to ensure preventive antibiotics can be provided quickly, reducing the risk of secondary infections.
- Beginning in the summer of 2002, Ontario will provide publicly-funded vaccine to contacts of IMD cases (as recommended by NACI) to further reduce the risk of secondary cases.

Related Indicators

2. Infant Mortality

7cii. Measles Incidence Rate

Overview

Measles is a highly communicable viral disease, which is preventable through immunization. Measles is more severe in infants and adults than in children, and the complications include middle ear infection, croup, and encephalitis. Effective strategies to reduce measles incidence reduce the associated health costs and improve health for Ontarians.

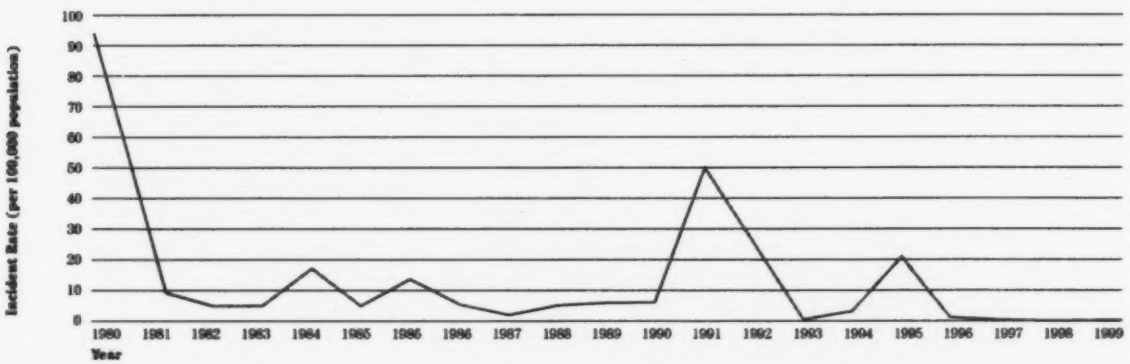
The healthcare system uses the incidence rate of measles to assess how well current techniques, including immunization and prompt follow-up of suspected cases to prevent secondary cases, are working to control the disease.

The incidence rate of measles is defined as the rate of new cases reported in a given year, expressed per 100,000 population. Cases are confirmed based on laboratory testing for infection in the absence of recent immunization with measles-containing vaccine which meets one of the following criteria: the detection of measles virus from an appropriate clinical specimen; a significant rise in measles specific antibody titre between acute and convalescent sera; or a positive serologic test for measles IgM using a recommended assay.

Ontario's Measles Incidence Rate

Ontario's measles incidence rate has dropped drastically since 1980, from 94.37 cases per 100,000 population in that year to 0.03 cases per 100,000 population in 2000. However, in 1995, Ontario experienced measles outbreaks – despite high coverage rates with a single dose of the measles vaccine. In response, the Ministry of Health and Long-Term Care introduced the publicly-funded two-dose *Measles Vaccine Catch-up Program* in 1996 to ensure that all children and school pupils were adequately immunized. Since implementing this program, Ontario's incidence rate of measles has declined substantially.

Ontario Incidence Rate of Measles Over Time – 1980 to 1999



Source: Notifiable disease reporting (1980-1997) and enhanced surveillance system (1998-2000)**

** Reporting should take into consideration the fact that the nature of this disease is such that it occurs as a periodic outbreak, which makes data subject to significant fluctuation and misinterpretation.

Health Services that Influence Measles Incidence Rates

Ontario has made a commitment to eliminate indigenous measles by the year 2005, and has taken the following steps to achieve this goal:

- For improved protection, two doses of measles vaccine are required for infants and children, with the first dose administered shortly after the first birthday, and the second dose by the time of school entry, at 4 to 6 years of age.
- Under the *Immunization of School Pupils Act* (ISPA), parents of school pupils are required to provide documentation showing that their children have received the required measles immunization, unless the student has a valid medical or philosophical exemption. Medical Officers of Health maintain these records, and may order the suspension of students who have not provided the required documentation.
- The *Day Nurseries Act* requires that children enrolled in licensed child care programs meet the immunization requirements of the local Medical Officer of Health, which follow Ontario's immunization schedule. Under Ontario's Mandatory Health Programs and Services Guidelines, Boards of Health are required to assess and maintain these records, and ensure that all children have the required immunization.

Related Indicators

2. Infant Mortality
9c. Patient Satisfaction – Services received from a family doctor/other physician

7ciii. Haemophilus Influenzae b (Invasive) (Hib) Disease Incidence Rate in Children

Overview

Prior to the introduction of vaccines, Haemophilus Influenzae b (invasive) (Hib) was the most common cause of bacterial meningitis, and a leading cause of other serious invasive infections in children.[47] Up to 5% of people who develop Hib meningitis will die,[48] and many who survive suffer permanent complications such as severe neurological disorders and deafness.

Ontario now provides Hib conjugate vaccine in its immunization program for children. The vaccine is given in four doses before the age of 2, in combination with diphtheria, pertussis, tetanus, and polio vaccines. Cases in fully immunized children are now rare.

Under its Mandatory Health Programs and Services Guidelines (MHPSG) and public health case management protocols, Ontario tracks the trends in Hib incidence rates in order to develop and revise control and prevention methods. Effective efforts to reduce the incidence of Hib will improve health and reduce the financial costs associated with hospitalization and treatment.

The incidence rate of Haemophilus Influenzae b (invasive) in children under five is defined as the number of new cases reported in a given year per 100,000 population. Cases are confirmed through laboratory testing for infection in the absence of recent immunization with Hib-containing vaccine, either through isolating H. influenzae type b from a normally sterile site or demonstrating H. influenzae type b antigen in cerebrospinal fluid.

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[47] Health Canada, *Haemophilus Influenzae Type b Disease at 11 Pediatric Centres 1996-1997*, Canada Communicable Disease Report, July 1, 1998.

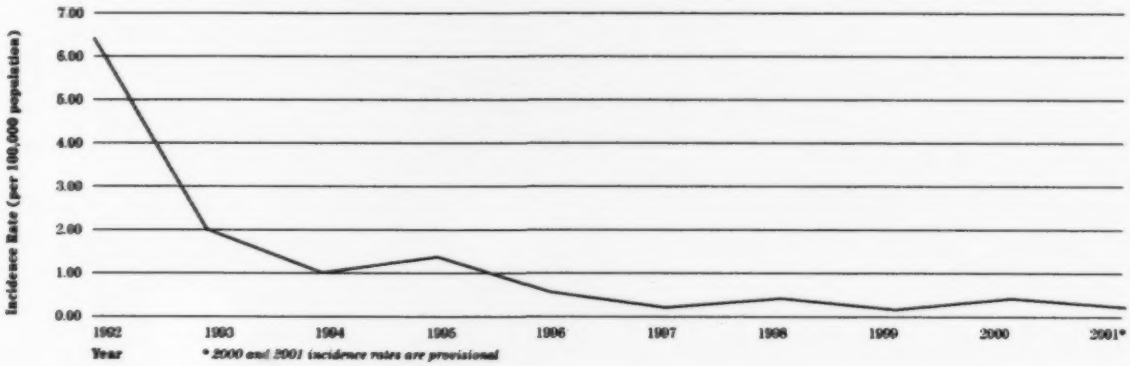
[48] Health Canada, *Material Safety Data Sheet, Haemophilus influenzae (group b)*, April, 2001.

Ontario's Hib Incidence Rate

Since 1992, Ontario's Hib incidence rate has dropped dramatically. This appears to be due to effective control measures, including the widespread availability of publicly-funded vaccines against Hib, high immunization rates in infants and children, better vaccines, and prompt follow up of suspect cases to prevent other infections.

Cases of Hib that occur today are usually due to either a lack of complete immunization against Hib (i.e., missed doses) or, in very rare instances, vaccine failure in completely immunized children.

Ontario Incidence Rate of Haemophilus Influenza for Children Less Than 5 Years of Age Over Time – 1992 to 2001



Source: Notifiable disease reporting and enhanced surveillance system, CIHI

Health Services that Influence Hib Incidence Rates

Ontario's Mandatory Health Programs and Services Guidelines, issued in 1997, established the following objective: "To reduce to zero the incidence of invasive Haemophilus Influenza type b (Hib) among children under five years of age". The Province uses a number of public health initiatives to achieve this objective:

- For the past 15 years, the Ministry of Health and Long-Term Care has provided vaccination at no charge to Ontario residents
- Public health units act quickly to follow-up and manage suspect cases and their contacts.
- Under the *Day Nurseries Act*, children enrolled in licensed childcare programs must meet the immunization requirements of the local medical officer of health, including immunization against Hib. Boards of Health are required to assess and maintain these records, and ensure that all children have the required immunization.
- Public health units are required to investigate each reported case of Hib to determine whether it could have been prevented, and to follow up contacts to prevent any secondary cases.

Related Indicators

2. Infant Mortality

7d. Prevalence of Diabetes

Overview

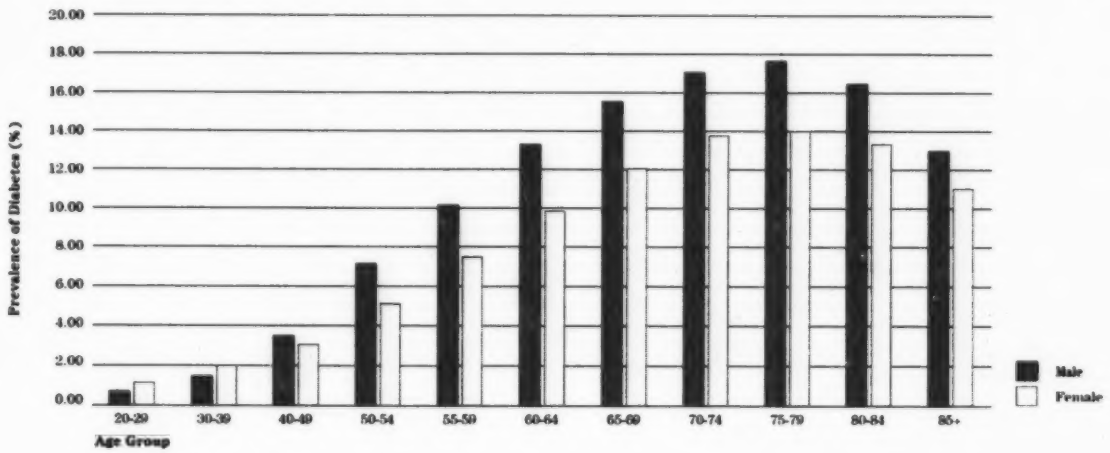
Diabetes is a serious health burden in Ontario. It contributes to premature death, and often leads to long-term complications including heart disease, stroke, kidney failure, limb amputation, and blindness.[89] In Ontario, people with diabetes are two to six times more likely to have cardiovascular problems, and 21% will develop heart disease or suffer a stroke (compared to four percent without diabetes).[90] It requires a substantial portion of resources for hospitalization and treatment. The risk of developing diabetes increases with age. Given Ontario's growing and aging population, the prevalence of diabetes is likely to increase.[91]

Because diabetes represents a significant burden of illness, it is extremely important for Ontario to monitor and track its prevalence over time. The prevalence of diabetes is reported as the number of individuals aged 20 or over in the age-standardized population with the disease at a specific point in time.

Diabetes Prevalence in Ontario

As the following graphs illustrate, diabetes is more common in males than females in all age groups except the 20 to 39 year olds. The first graph demonstrates the link between diabetes and aging, and the second indicates that diabetes prevalence in Ontario has increased steadily over the past three years.[92]

Ontario Age – Standardized Prevalence of Diabetes Between Males and Females – 1999/2000



Source: National Diabetes Surveillance System Database (NDSS)[93] Statistics Canada Demography Division (population estimates), CIHI[94]

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[89] Ontario Ministry of Health and Long-Term Care – *Diabetes: Strategies for Prevention Report of the Chief Medical Officer of Health* – November, 1999.

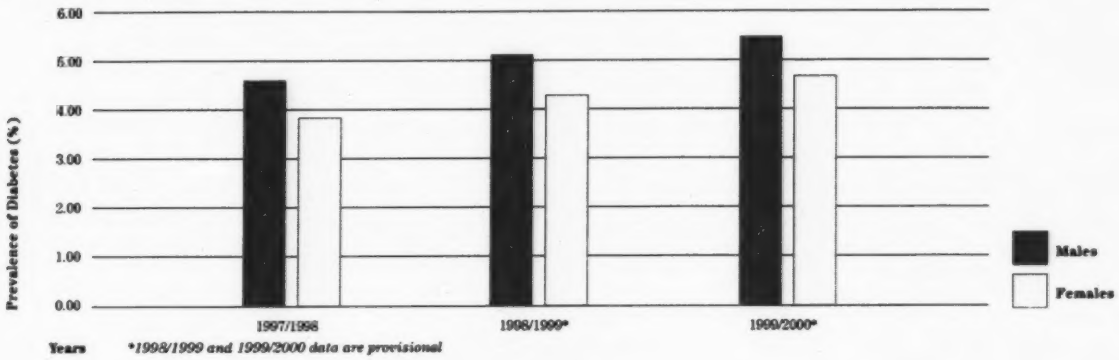
[90] Ibid.

[91] Ibid.

[92] These findings are consistent with but not identical to those in the recently released *Review of Diabetes in Ontario: An ICES Atlas*, Chapters 1-4. Doctor Jan Hux, principal investigator, August 14th, 2002. Results are derived from the same database, the National Diabetes Surveillance System (NDSS),[93] but the ICES prevalence rate differs from the rates reported here because its results were age- and sex-standardized to different populations. The ICES report also uses the 1996 Ontario population, while these findings are based on the 1991 Canadian census population.

[93] The National Diabetes Surveillance System is a new system and in the first years of data compilation. Rising prevalence may be in part due to the incomplete detection of all existing cases since only three years of data are available. It is expected that up to five years of complete data will be needed to ensure that all those with diabetes prior to system implementation have been appropriately classified.

Ontario Age-Standardized Prevalence of Diabetes Between Males and Females Over Time – 1997/1998 to 1999/2000



Source: National Diabetes Surveillance System Database (NDSS)[94]

Health Services that Influence Diabetes Prevalence

Ontario is taking steps to prevent type 2 diabetes,[95] and to provide the medical care and education that will allow people with diabetes to understand and manage their condition, and live longer. This effort is a long-term investment, and it may take about 15 years to see its positive impact on prevalence rates. The Ministry of Health and Long-Term Care's *Diabetes Strategy*, initiated in 1992, focuses on wellness, health promotion, promotion of early intervention, and effective prevention of complications. Key components of the strategy currently operating include:

- Establishment of the Northern Diabetes Health Network
- Improved access and services for seniors and Aboriginal people
- Development of a Diabetes Complication Prevention strategy
- A coordinated provincial model for pediatric diabetes care
- Designing a framework and action plan for the prevention of Type 2 diabetes
- Evaluation of diabetes program effectiveness and cost/benefits.

Related Indicators

1b. Disability Free Life Expectancy (DFLE)
5c. 30-Day Acute Myocardial Infarction In-Hospital Mortality Rate
5d. 30-day Stroke In-Hospital Mortality Rate
14a. Percent Teenaged Smokers
14b. Physical Activity

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[94] The National Diabetes Surveillance System is a new system and in the first years of data compilation. Rising prevalence may be in part due to the incomplete detection of all existing cases since only three years of data are available. It is expected that up to five years of complete data will be needed to ensure that all those with diabetes prior to system implementation have been appropriately classified.

[95] Type 2 diabetes is the most common form of diabetes. In it, either the body does not produce enough insulin - needed for the cells to use sugar – or the body's cells ignore the insulin.

Quality of Service Indicators

8. Wait times for Key Diagnostic and Treatment Services

Ontario's healthcare system strives to provide the care people need when they need it and in a manner that assures longer-term sustainability. This involves making complex planning and allocation decisions for different programs and services based on demand and urgency, including planning operating room schedules, developing effective hospital and long-term care bed utilization strategies, and planning prevention, treatment and follow-up services. The goal is to ensure reasonable wait times for services.

Monitoring wait times is one way to assess the quality and availability of health services. The systematic collection and reporting of wait time data in Canada is relatively new. This document reports on wait times for cardiac surgery. Future reports will also include wait times for other services.

8a. Wait Times for Cardiac Surgery

8ai. Estimated Number of Months to Clear Current Wait List for CABG
8aii. Median Wait in Days for CABG Surgery
8aiii. Distribution of CABG Wait Times

Overview

Ontario's healthcare system currently devotes a substantial portion of its resources to treating coronary artery disease. One of the major treatment options is cardiac surgery. Patients who face excessive wait times for cardiac surgery have an increased risk of mortality and further cardiac events. Excessive wait times heighten anxiety, reduce quality of life and result in lost productivity. They may also reflect poorly on healthcare accessibility, and lead to decreased patient satisfaction and confidence in the health system. Short waiting lists and corresponding shorter waiting times correlate to lower mortality rates for patients awaiting surgery.

For the past decade and more, Ontario has focused particular attention on wait times for coronary artery bypass graft surgery (CABG), one type of cardiac treatment. Wait times are measured by tracking the number of days patients wait between cardiac catheterization (diagnoses) and CABG surgery, in a given period of time.

For this report, only adults 20 years of age and older who had been designated by a physician as needing CABG surgery, and who had not yet received their surgery on the last day of the period in question, were included in the sample.[96]

A person may also experience other waits prior to receiving cardiac surgery related to diagnostic tests or physician availability. As the healthcare system develops its ability to monitor wait times, it will provide more comprehensive reporting.

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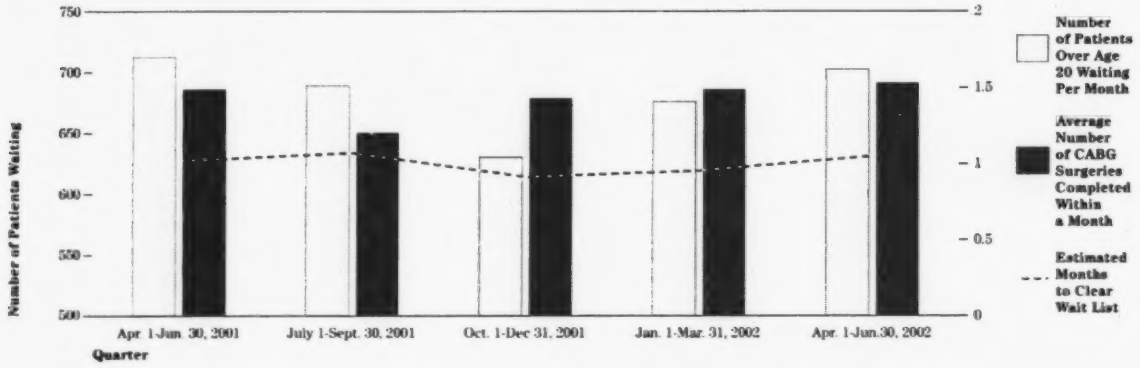
[96] Ontario's findings includes both emergent (in-hospital) and non-emergent (outpatient) cases. Urgent, semi-urgent, and elective cases have all been included in the calculations supporting these results. Only patients receiving services in Ontario have been captured within this reference population. Ontario residents receiving services in other jurisdictions have been excluded from calculations for the purposes of this report.

CABG Wait Times in Ontario

From April 1, 2001 to June 30, 2002 , patients whose cardiac care did not involve any other procedure generally had an estimated waiting time of one month (1.01 months from April 1, 2001 to June 30, 2002).

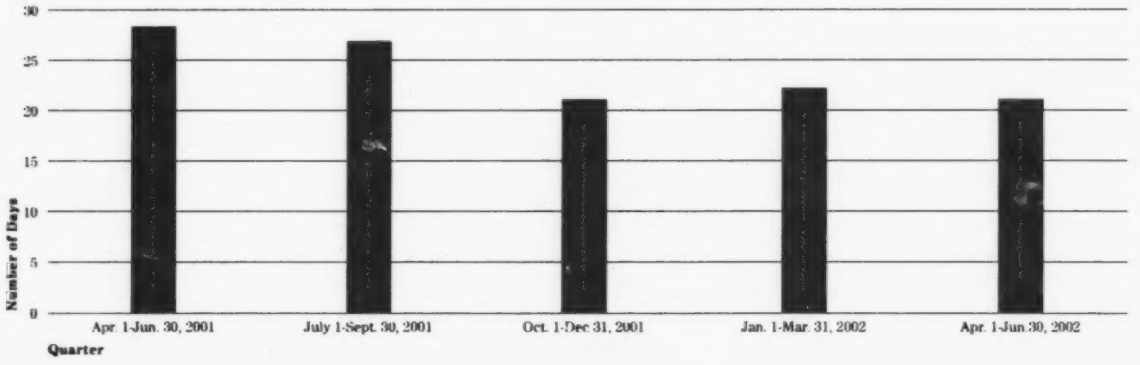
Estimated Number of Months to Clear Waiting List for Coronary Artery Bypass Graft Surgeries in Ontario – April 1, 2001 to June 30, 2002



Source: Cardiac Care Network of Ontario

Over the same period, the median wait time between cardiac catheterization and CABG in Ontario was 23 days.

Median Number of Days Waited Between Cardiac Catheterization and Coronary Artery Bypass Graft in Ontario – April 1, 2001 to June 30, 2002

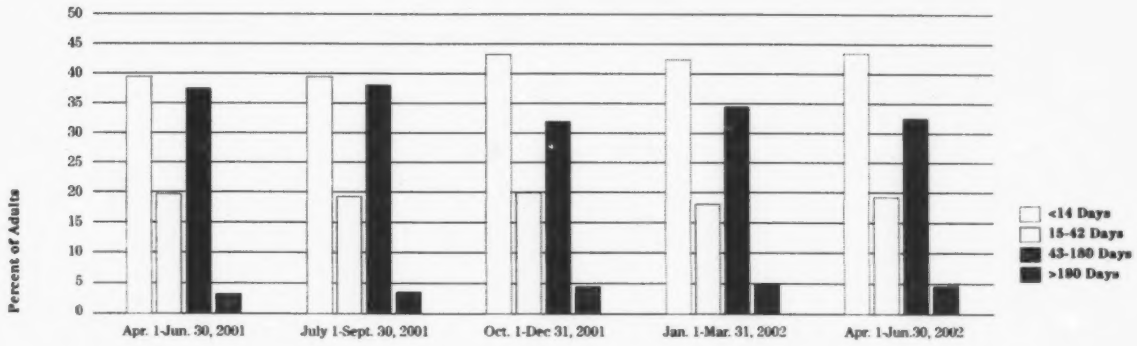


Source: Cardiac Care Network of Ontario

The majority of Ontarians (60.8%), who needed CABG received the surgery within 42 days, though a significant percentage of patients (35.0%), waited between 43-180 days. A significant number, (over 40%), of these surgeries were classified as elective, and were not urgent. For cases classified as urgent, the median wait time was seven days.[97] Of all CABG surgeries performed between April 1, 2001, and June 30, 2002, 41.5% were classified as elective, 34.4% were semi-urgent, and 23.0% were urgent.[98]

[97] Cardiac Care Network of Ontario, 2002.
[98] Ibid.

Distribution of Wait Times Between Cardiac Catheterization and Coronary Artery Bypass Graft in Ontario – April 1, 2001 to June 30, 2002



Source: Cardiac Care Network of Ontario

Health Initiatives that Influence Wait Times for CABG

Ontario uses a number of strategies and initiatives to maintain and improve health outcomes for people with cardiac disease, and to manage wait times:

- Ontario monitors the amount of cardiac surgery over time, and uses the information to evaluate system performance and allocate funding.
- In 1990, Ontario established the *Cardiac Care Network of Ontario* (CCNO) to manage wait lists for Ontario cardiac services . The Network provides liaison and coordination services for all adults awaiting cardiac surgery, catheterization or coronary angioplasty in Ontario, and advises the Ministry of Health and Long-Term Care on matters related to cardiac services. CCNO is also responsible for the ongoing development, management and maintenance of Ontario's information system for cardiac services.
- The Ministry funds cardiac research, invests in appropriate infrastructure, health human resources and the hospital report cards, and provides dedicated financial support to hospitals for cardiac services.
- Ontario is also improving access to cardiac surgery interventions. Its five-year expansion strategy for cardiac services will see three new cardiac surgery centers fully operational by 2004, with dedicated funding to support additional cardiac procedures to ensure prompt, equitable access to diagnostic tests and appropriate treatments.

Related Indicators

5a. Age-Standardized Mortality Rates for Lung, Prostate, Breast and Colorectal Cancer, Acute Myocardial Infarction (AMI) and Stroke
5c. 30-Day Acute Myocardial Infarction In-Hospital Mortality Rate
7b. Potential Years of Life Lost due to Lung, Prostate, Breast and Colorectal Cancer, AMI, Stroke, Suicide, and Unintentional Injury
7d. Prevalence of Diabetes
10a. Re-admission Rate for Acute Myocardial Infarction
13e. Exposure to Environmental Tobacco Smoke
14a. Percent Teenaged Smokers
14b. Physical Activity
14c. Body Mass Index

9. Patient Satisfaction (PS)

9a. Patient Satisfaction – Overall Healthcare Services Received
9b. Patient Satisfaction – Services Received in a Hospital
9c. Patient Satisfaction – Services Received From a Family Doctor or Other Physician
9d. Patient Satisfaction – Community-Based Services Received

Overview

Patient satisfaction (PS) is another way to measure the quality of health services. It reflects patients' direct experience with the healthcare system at a particular point in time, and reflects the personal side to care. Patient satisfaction measures provide insight into where the healthcare system is meeting patient expectations as well as where and how services can be improved. Quality improvement takes a strong commitment to make effective, long-term changes. The opinions of patients help identify the strongest concerns and focus the healthcare system on those concerns.

For this report, Ontario looked specifically at patient satisfaction with:

a) overall healthcare services
b) hospital services
c) family doctor/other physician services and
d) community-based services.

The data for these measures comes from the 2001 Canadian Community Health Survey (CCHS), which is a longitudinal national survey of individuals who: had received healthcare services over a 12-month reference period, were 15 or older, and lived in private households. Individuals were asked to rate their satisfaction on a five-point scale, ranging from very dissatisfied to very satisfied. The graphs on the following pages illustrate those who rate themselves as "very satisfied" or "somewhat satisfied" with the services received.[99]

These findings are presented in the context of two related initiatives:

- The Ontario government's *Public Dialogue on Health Care*, a survey distributed to Ontario households in August 2001, designed to help the government identify health issues that matter most to the public and determine how to improve the health system. Over 400,000 Ontario households responded, and the results were analyzed by Gregg, Kelly, Sullivan and Woolstencroft: The Strategic Counsel and released on January 21, 2002.
- Ontario's annual *Hospital Report Card* (HRC), which includes an elaborate, repeating patient survey component that provides in-depth findings from surveys and interviews with patients and/or their family/caregiver about their hospital encounters. Key findings are also highlighted in the annual newspaper insert on hospital performance that the government releases to all Ontarians. In 2001, report cards were issued for most acute care, emergency department (ED) care, and complex continuing (or chronic) care hospital services in Ontario. In future years, HRC will expand the range of hospital-based services monitored for patient satisfaction to include mental health and rehabilitation services.

  The magnitude and breadth of this venture bears noting. For example, the survey for HRC's emergency department care report card was the largest emergency department patient satisfaction survey conducted in North America (and quite likely the world) to date: 75, 271 patients seen in an ED from August through October 2000 were mailed a survey and about 24,000 responded. The survey included 39 questions on the patients' perceptions of the care they received, the time it took to receive care, their understanding of the care received, and their understanding of instructions for follow-up care.[100]

Patient Satisfaction with Health Services in Ontario

a) Overall healthcare. Studies of satisfaction levels with overall healthcare examine patients' experiences with all aspects of healthcare including: food, amenities, nursing services, physicians, wait times, and access to services. In the 2001 CCHS survey, 84.7% of Ontario respondents reported that they were "very satisfied" or "somewhat satisfied" with the overall health services provided to them. This was consistent with the Canadian average for this indicator. When Ontario responses were examined by age group, those aged 65 years and up were the most satisfied.

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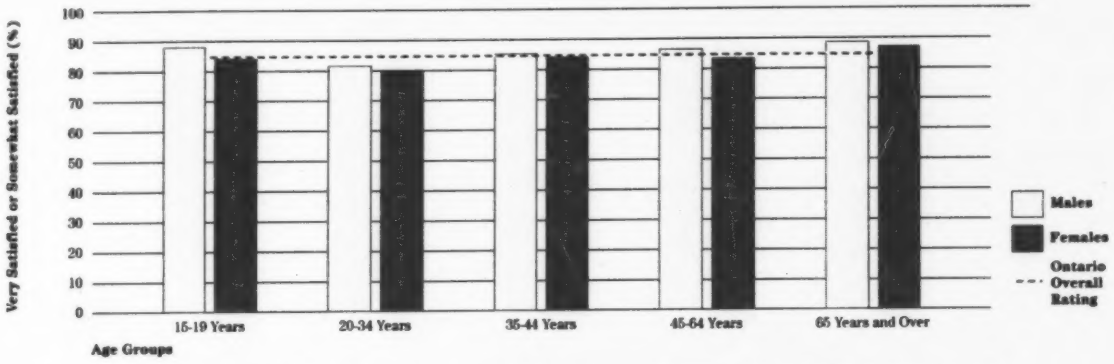
[99] While this survey gathers data on patient experience, it does not provide information on the intensity of a patient's experience (e.g., annual checkup as opposed to a kidney transplant), nor does it evaluate for the different aspects of service that contribute to users' overall perception and satisfaction (e.g., accessibility, availability, quality, the degree to which the services provided were patient-centered).

[100] The *Dialogue* and the CCHS are all very different processes, with different methodologies and field sample characteristics. Caution is advised when comparing CCHS findings directly with results of the *Dialogue*. Although the *Dialogue* reported some public satisfaction findings (e.g., 77% of Ontarians rated their health system "excellent, "good" or "fair"), the *Dialogue*'s particular value lies in its ability to highlight areas of particular concern to Ontarians and their priorities for government action, which included improved access to early diagnostic tools to catch illnesses earlier, reduced waiting times, and the ability to keep people well in the first place instead of treating them after they get sick.

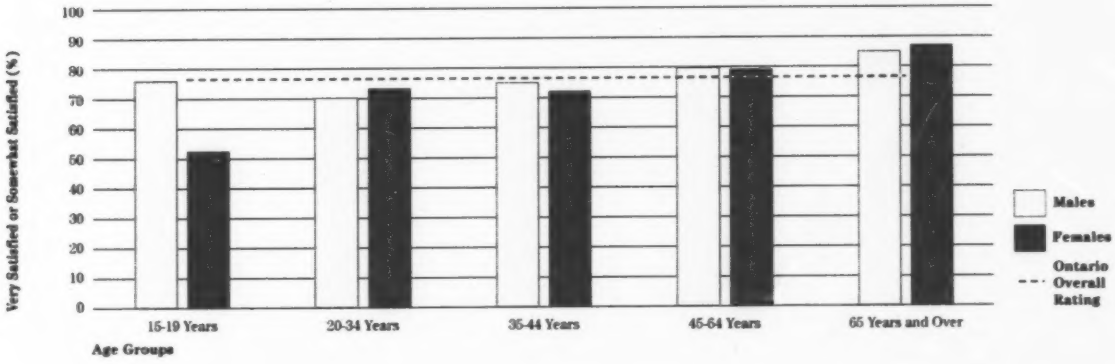
Ontario Males vs Females "Very Satisfied" or "Somewhat Satisfied" with Overall Health Care Services – 2000/2001



Source: Canadian Community Health Survey (sub sample approximately 25,000) – Cycle 1.1 2000, Statistics Canada

b) Hospital Services. In fiscal 2001, Statistics Canada added setting-based questions to the CCHS. According to the results, 76.9% of Ontario patients were very or somewhat satisfied with the hospital services they received. When examined by age group, those people aged 65 years and over were, comparatively, the most satisfied with hospital services.

Ontario Males vs Females "Very Satisfied" or "Somewhat Satisfied" with Hospital Services – 2000/2001



Source:Canadian Community Health Survey (sub sample approximately 25,000) – Cycle 1.1 2000, Statistics Canada

In Ontario's 2001 *Public Dialogue* results, 68% of respondents claimed to be either very satisfied, or somewhat satisfied with the in-patient hospital services that they had received, while 54% were very or somewhat satisfied with the emergency department services that they had received.

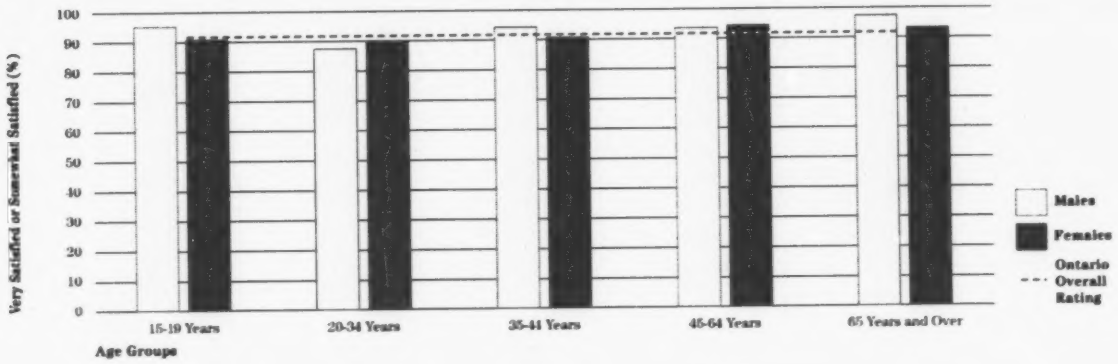
In the HRC 2001 surveys, 88% of acute care patients and 75% of complex continuing care patients rated the care they received in Ontario's hospitals as excellent or good, while the average patient satisfaction with emergency department care varied from 63 to 90 (out of a possible 100) across hospitals.

Results from the HRC surveys varied across individual hospitals as well as across regions and types of hospitals. Although patients responded in different ways about their satisfaction with physicians and medical treatment, there was very little variation across regions in average scores for this indicator, suggesting that patients had similar levels of satisfaction across the province. About 72% of emergency patients gave physicians and medical treatment scores of 80 (excellent or good) or greater.

When asked about their willingness to return to the same emergency department, approximately 79.3% of patients provided scores of 80 or greater. Like the findings on overall satisfaction, and satisfaction with physicians, there was relatively little variation across regions or across peer groups for this indicator. Hospitals received the lowest emergency department patient satisfaction ratings for the quality of the emergency department facilities and the attention to their privacy and property while in the emergency department. Only 40.1% of patients provided scores of 80 or greater. The majority of patients (54.4%) scored this indicator as 50 to 79.9 (fair to good).

c) Family Doctor/Other Physician Services. To assess patient satisfaction with family physician services, the CCHS examines aspects of care, such as the availability of service, distance to travel, quality of care provided, and friendliness of service received. In the fiscal 2001 CCHS survey, 91.7% of Ontarians were very or somewhat satisfied with physician services. All of the age groups surveyed reported similar levels of satisfaction with family doctor/other physician services.

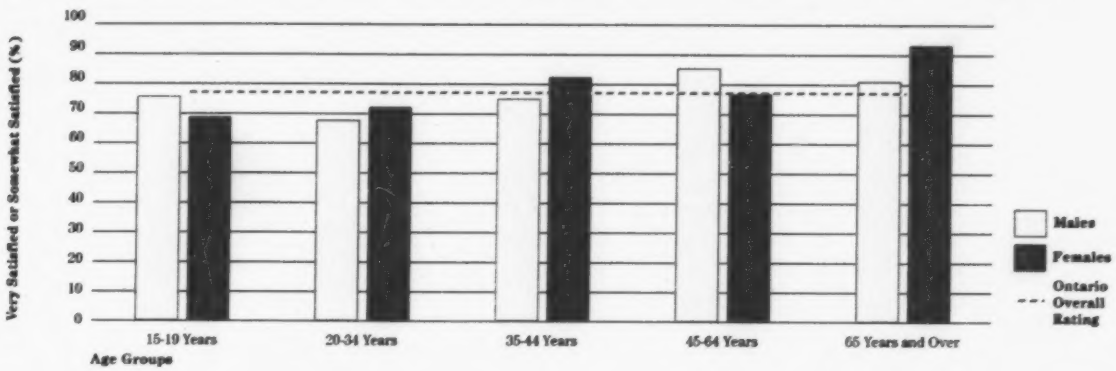
Ontario Males vs Females "Very Satisfied" or "Somewhat Satisfied" with Doctor/Other Physician Care – 2000/2001



Source: Canadian Community Health Survey (sub sample approximately 25,000) – Cycle 1.1 2000, Statistics Canada

d) Community-based Services. The CCHS examined various aspects of community-based health services, including information and referrals received, assessments, nursing and homemaking services, and daily living assistance. In the 2001 CCHS survey, 77.3% of Ontarians were very or somewhat satisfied with the community services they received. Those aged 65 and over reported the highest levels of satisfaction.

Ontario Males vs Females "Very Satisfied" or "Somewhat Satisfied" with Community Based Services – 2000/2001



Source: Canadian Community Health Survey (sub sample approximately 25,000) – Cycle 1.1 2000, Statistics Canada

Although the *Public Dialogue* asked no specific questions about community based services, it did solicit feedback on Ontario's long-term care services and its home care services. Findings indicated that 59% of respondents were either very satisfied or somewhat satisfied with the level of long-term care services provided, while 69% had the same level of satisfaction with Ontario's home care services.[101] These specific results are consistent with the generally lower levels of satisfaction (when compared with the CCHS) expressed across the *Dialogue* satisfaction findings.[102] They also broadly support the overall trend within the CCHS to higher levels of satisfaction with hospital and physician-based services in Ontario.

Related Indicators

4. Self-Reported Health

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[101] The Ministry of Health and Long-Term Care, *A Public Dialogue on Health Care – A Report to the Ministry of Health and Long-Term Care*, January, 2002.

[102] The *Dialogue's* lower public satisfaction results may reflect the exclusively self-selecting nature of its field sample.

10. Hospital Re-admissions for Selected Conditions

10a. Re-admission Rate for Acute Myocardial Infarction
10c. Re-admission Rate for Pneumonia

Overview

Hospital re-admission rates are a measure of the quality of care that patients receive. High re-admission rates may suggest that patients are not receiving the quality of care they need while lower rates may suggest that patients are being treated and discharged from hospital appropriately and are getting the necessary follow up services.

For this indicator, Ontario is reporting specifically on re-admissions for acute myocardial infarction (AMI) and pneumonia, both of which are also tracked within the Ontario *Hospital Report Card* (HRC). Note: the HRC findings are similar but not identical to the re-admission rates presented here. The methodology used to develop these rates was based on that used in Ontario's *Hospital Report Card*, but modified as part of the PIRC process to define common measures for reporting. This was done to accommodate variations between provincial and territorial data systems and to help ensure comparability across provinces. Caution is therefore advised when comparing the findings that follow to those reported on related measures within the *Hospital Report Card*.

These measures examine the risk-adjusted rates of unplanned re-admission to an acute care hospital following admission for: (i) acute myocardial infarction (AMI) or (ii) pneumonia. A case is counted as a re-admission if it is for a diagnosis or procedure associated with the reason for the patient's initial hospital stay. To qualify as a re-admission, the admission must occur within 28 days of the index episode of care. Episodes of care refer to all continuous acute care hospitalizations, including transfers.

Ontario's Re-admission Rates for AMI and Pneumonia

Ontario's three-year pooled average for re-admissions for AMI is 7.5%. During 1999/2000, men accounted for almost two-thirds (65%) of all AMI hospitalizations in Ontario.[100] Gender may have an effect on the signs and symptoms of cardiac disease, which could influence re-admission rates. Male/female breakdowns for the AMI re-admission rates were not available in time for this report, but will be included in *Hospital Report Card 2002: Acute Care* scheduled for release later this year.

Ontario's three-year pooled average for re-admissions for pneumonia is 3.2%.

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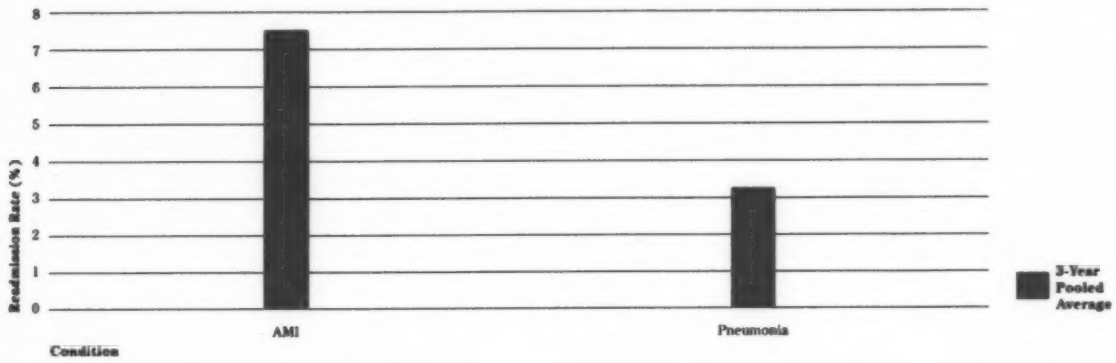
[100] *Hospital Report 2001: Acute Care*, the Canadian Institute of Health Information, page 32 figure 3.2: Who Was Hospitalized in 1999/2000?

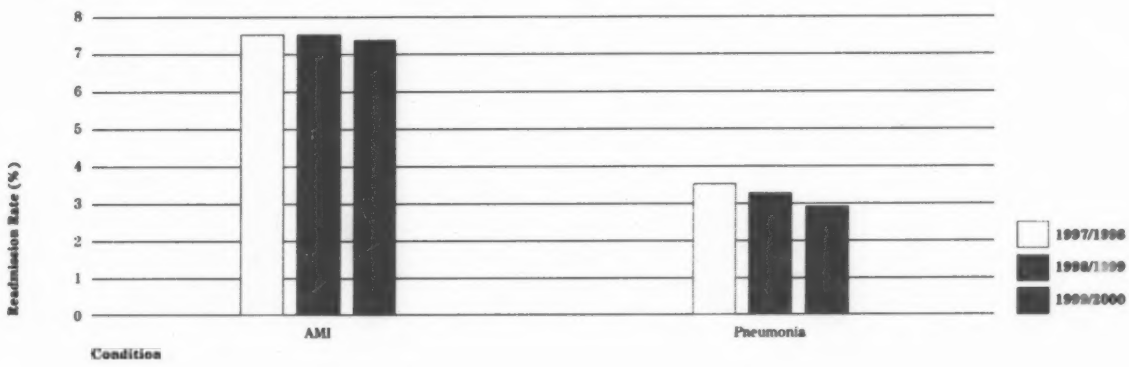
Ontario Hospital Readmission Rate for AMI and Pneumonia – 3-Year Pooled Averages – 1997/1998 to 1999/2000



Source: Hospital Morbidity Database, CIHI

Over the past three years, Ontario has experienced relatively steady rates of AMI re-admissions. The rate of re-admissions for pneumonia appears to be declining over time, despite a 13% increase in the overall rate of first-time admissions for pneumonia over the same period of time.[104]

Ontario Year-By-Year Readmission Rate for AMI and Pneumonia 1997/1998 to 1999/2000



Source: Hospital Morbidity Database, CIHI

Related Indicators

5a-d. Change in Life Expectancy
7. Reduced Burden of Disease, Illness and Injury
14a-d. Health Promotion and Disease Prevention

[104] *Hospital Report 2001: Acute Care*, the Canadian Institute of Health Information, page 32 figure 3.2: Who Was Hospitalized in 1999/2000?

11. Access to 24/7 First Contact Health Services

The database to support indicators 11a through d within the Plan for Federal, Provincial, Territorial Reporting on 14 Indicator Areas[105] is still in development. For this report, Ontario is reporting on its Telehealth initiative, which is the cornerstone of its access to 24/7 first contact health services strategy.

Overview

Access to 24/7 first contact health services is a measure of quality care. The easier it is for people to get the health information they need, the more likely they are to take appropriate steps to promote or protect their health.

Ontario provides a province-wide, free, confidential telephone service providing teletriage and health information to Ontarians 24 hours a day, 7 days a week. *The Telehealth Ontario* service was introduced to residents in the 416 and 905 area codes in January 2001 and, by December 2001, was available to all 11.9 million residents of Ontario. *Telehealth Ontario* service is available in Teletypewriter (TTY), English, French, and up to 108 other languages. Services are provided by registered nurses.

To ensure and maintain high quality care, Telehealth Ontario focuses on four key areas:

- **Timeliness – by providing access to health information and advice from the nearest telephone**
- **Accessibility – through a toll-free number and no requirement for a healthcare number, 24 hours a day, 7 days a week**
- **Continuity and consistency of care – by giving nurses access to the history or chart of repeat callers**
- **Safety – by giving nurses access to standardized decision-making software which minimizes the chance of errors and to central ambulance communications in the caller's area in case of emergency**

Much of the program's success depends on the ability to predict and meet the demands for service, and to recruit, train, and retain experienced staff. To be effective, the service must be actively promoted. It must also maintain a high level of caller satisfaction with the information and advice provided.

The Impact of Telehealth Services in Ontario

In its first 18 months of operation, *Telehealth Ontario* received over 1,000,000 calls.[106] As of December, 2001, the service became available to every citizen of Ontario, and Telehealth Ontario now receives approximately 3,100 calls per day.[107] Since the service became available province-wide, approximately 37% of callers to the service are repeat callers.[108]

The following graphs paint a picture of the users of *Telehealth Ontario*. Most of the advice provided by Telehealth nurses is for people between the ages of 25 and 64 who may be calling for themselves or others. The majority of care recipients are women, and come from the 905 and 416 area codes, where the province's population is concentrated.

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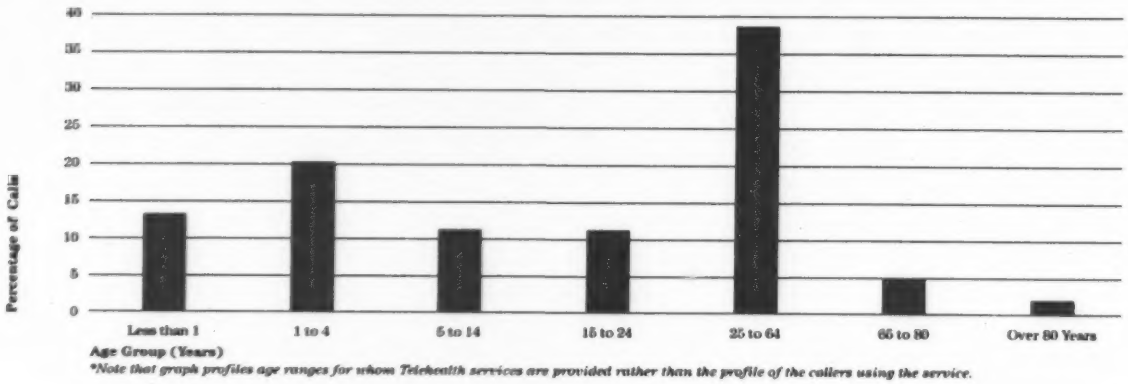
[105] F/P/T Performance Indicators Reporting Committee, July 2002
[106] Ontario Telehealth Database, Clinidata Corporation, March, 2001 – August, 2002
[107] Ontario Telehealth Database, Clinidata Corporation, January, 2002 – August, 2002
[108] Ibid.

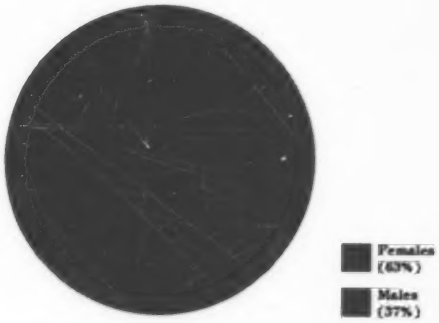
Ontario Care Recipient Profile for Telehealth Services – December 1, 2001 to June 30, 2002



**Note that graph profiles age ranges for whom Telehealth services are provided rather than the profile of the callers using the service.*

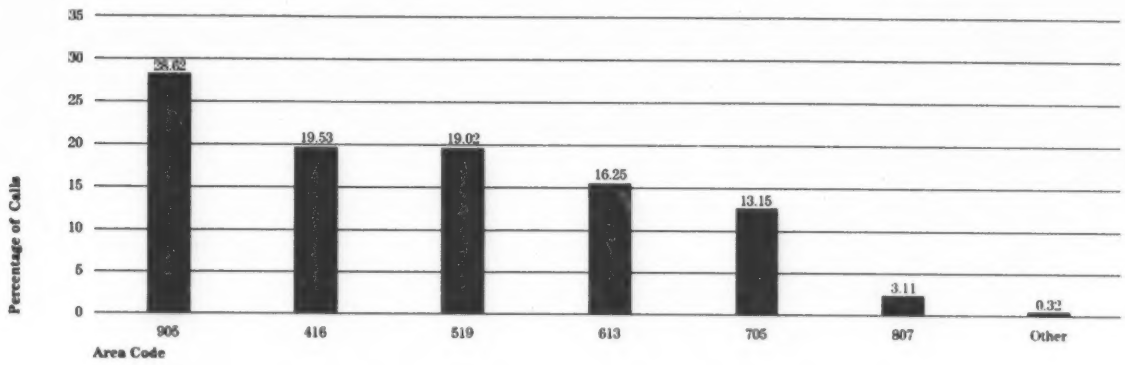
Source: Ontario Telehealth Database, Clinidata Corporation 2002

Percentage of Care Recipients by Gender – December 1, 2001 to June 30, 2002



Source: Ontario Telehealth Database, Clinidata Corporation 2002

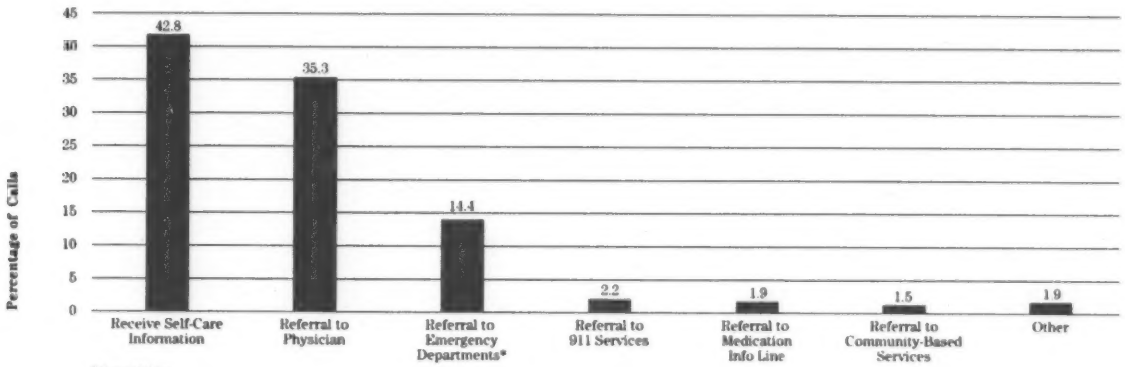
Telehealth Services Triage Calls By Geography – December 1, 2001 to June 30, 2002



Source: Ontario Telehealth Database, Clinidata Corporation 2002

The following chart summarizes the disposition of the calls. Almost half (43%) result in the caller receiving self help information, and do not involve a referral to any other part of the healthcare system.

Telehealth Services Triage Calls By Disposition – December 1, 2001 to June 30, 2002



** Includes triage-directed referrals and referrals when no other options to access a physician exist*

Source: Ontario Telehealth Database, Clinidata Corporation 2002

12. Home and Community Care Services

12a. Admissions to Publicly-Funded Home Care Services per Capita
12b. Admissions to Publicly-Funded Home Care Services per Capita 75+

Overview

With Ontario's aging population, the demand for services that assist with activities of daily living is growing. To place this growth in context, "...780,000 (8.9%) non-institutionalized Ontarians required help with instrumental activities of daily living in 1996/97, while 190,000 (2.2%) required help for basic activities of daily living.[109] In the 1996/97 Statistics Canada National Population Health Survey, 11.6% reported that they found it necessary to restrict their activities at home, school, work, or leisure due to a long-term health problem or handicap."[110]

Because of this, community-based services that strive to improve discharge planning following hospital stay and provide home care services are an important part of Ontario's health system. In recent years, Ontario has expanded programs to deliver health services to people in their homes. Since 1995, Ontario spending on home care has increased by 70%. These services offer clients a number of benefits, including the ability to maintain their lifestyles and independence for as long as possible, and avoid hospitalization. They may also help ensure that spaces in long-term care facilities are reserved for those with greater healthcare needs.

To estimate the demand for home care services, the Ministry uses a variety of measures including admissions and utilization measures. These measures can also be used to identify shortages of services in other healthcare sectors and explain trends in service provision. Reporting admissions to home care services is an effective way to measure the number of people receiving these services. However, volume measures alone cannot show whether or how well the client's needs are being met.

For purposes of this report, admissions are defined as: a) the number of admissions to publicly funded home care services, including home health and home support services, per capita; and b) the number of admissions to publicly funded home care services, including home health and home support services per capita, for those 75 years of age and older. When interpreting the following graphs, caution is advised. Three years' data is not sufficient to identify trends over time and the sample involved may include data that reflect multiple admissions for the same client (an individual may be counted more than once in a given fiscal year if he or she was discharged from the home care program and accepted for another period).

Home Care Admissions in Ontario

Over the past three years, Ontario has experienced significant variation in the total number of admissions to home care services. Over the same period of time, however, the total number of clients has risen. More research is required to explain the reasons for this variation in clients and admissions, which may include changes in hospital discharge practices, implementation of personal support regulations, the effects of a 1999 communications strategy implemented by Ontario's *Community Care Access Centres* (CCACs) to inform the public of their services, and subsequent activities to balance budgets.

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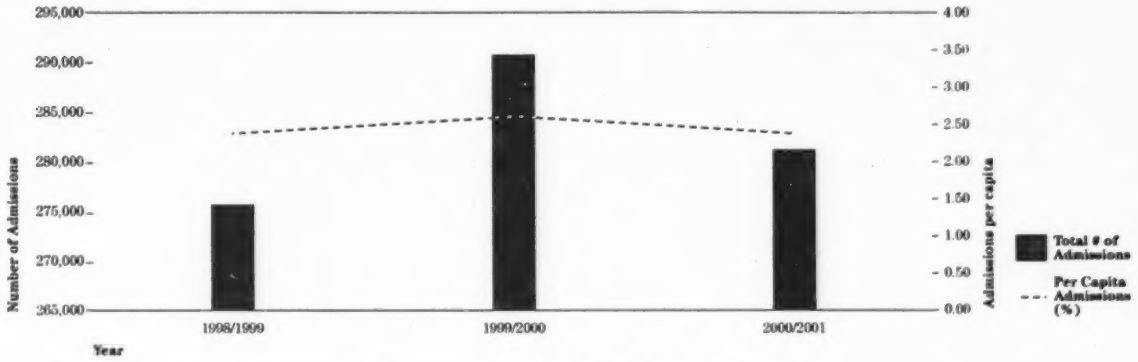
[109] Instrumental activities include tasks such as housekeeping, laundry, and meal preparation. Basic activities include tasks such as bathing, dressing and grooming, and getting in and out of bed.

[110] *Atlas Reports – the Health of Ontarians, Report #1. Adding Years to Life and Life to Years: Life and Health Expectancy in Ontario*, Douglas G. Manuel & Susan E. Schultz, Institute for Clinical Evaluative Sciences, January 23, 2001.

Ontario Admissions to Publicly Funded Home Care Services per capita Over Time – 1998/1999 to 2000/2001

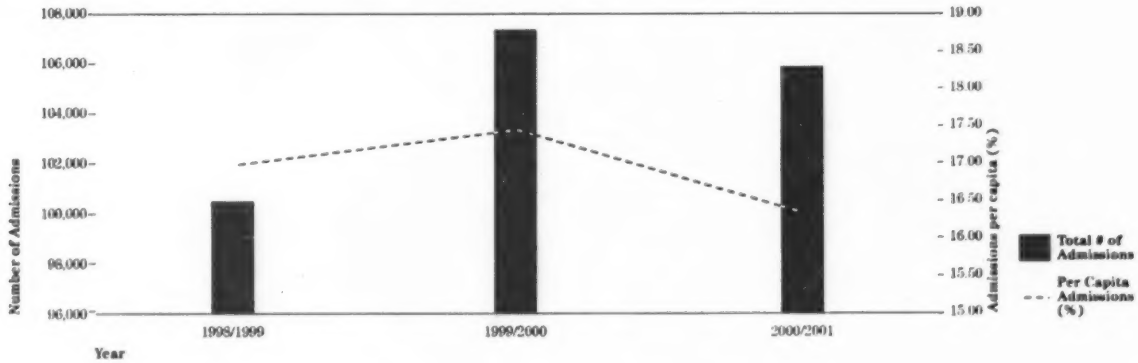


Source: CIHI, Ad hoc survey of provincial and territorial ministries; Statistics Canada Census

Home care services are particularly important for those over age 75. "By age 75 years, one in four Ontarians report a long-term disability and half live with three or more chronic conditions.[111] Although men and women did not report large differences in the prevalence of long-term disability and activity restrictions, women were almost twice as likely to require assistance with activities of daily living. As with measures of mortality and disease, the northern regions had the highest proportion of people reporting deficits for all Health-Related Quality of Life (HRQOL) measures".[112]

Although there was substantial variation in admissions to home care services among the general population, the following chart suggests that those over age 75 had higher rates of admission to home care services.

Ontario Admissions to Publicly Funded Home Care Services For Persons age 75 and Over per capita Over Time – 1998/1999 to 2000/2001



Source: CIHI, Ad hoc survey of provincial and territorial ministries; Statistics Canada Census

[111] *Atlas Reports – the Health of Ontarians, Report #1. Adding Years to Life and Life to Years: Life and Health Expectancy in Ontario*, Douglas G. Manuel & Susan E. Schultz, Institute for Clinical Evaluative Sciences, January 23, 2001.

[112] Ibid.

Health Services that Influence Home Care Admission Rates

- In 2001/2002 Ontario spent nearly $1.2 billion for services provided through CCACs, which provide a simplified access for people requiring Ontario's long-term care community services. CCACs are responsible for coordinating service, planning, and monitoring; determining eligibility for services; providing assessment, case management, and placement coordination services for admission to long-term care facilities (nursing homes, and homes for the aged); and for providing service information and referrals to other long-term care services.

Related Indicators

All disease measures will impact on the utilization of home and community care services.
7a-d. Reduced Burden of Disease, Illness and Injury
12d. Hospitalization Rate for Ambulatory Care Sensitive Conditions
13a-e. Public Health Surveillance and Protection

12d. Hospitalization Rate for Ambulatory Care Sensitive Conditions

Overview

Although preventative care, primary care, and community-based management will not eliminate all hospitalizations, they can help reduce them. Healthcare professionals generally believe that managing long-term health conditions, such as diabetes, asthma, and alcohol and drug dependence, before a patient requires hospitalization, improves the patient's health and contributes to better overall community health status. Access to effective community-based treatments for these ambulatory care sensitive conditions (i.e., conditions where appropriate ambulatory or community-based care can prevent or reduce hospitalization) allows Ontarians to participate in their activities of daily living in home, school, and work environments without disruption. This, in turn, enhances an individual's quality of life and economic viability. Community care also often saves money, as it usually costs less than hospitalization. Optimizing the management and treatment of ambulatory care sensitive conditions will contribute to both improved patient health outcomes and more efficient resource utilization.

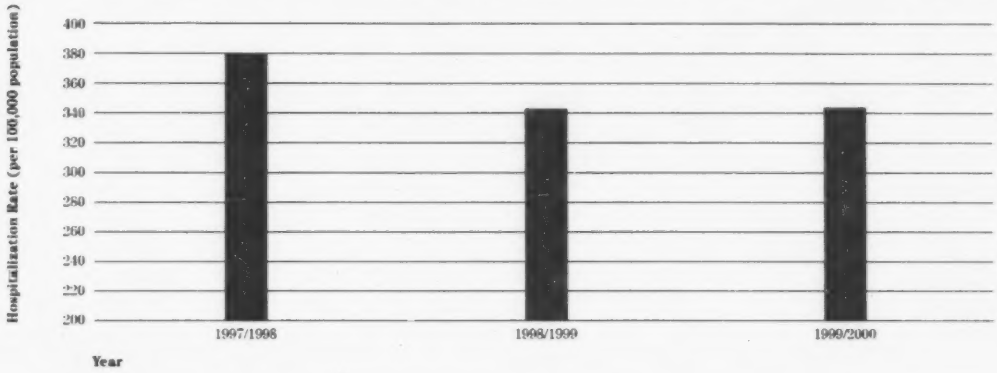
Tracking hospitalization rates over time for ambulatory care sensitive conditions can provide an indication of whether community- and home-based treatment services are effective in reducing hospitalizations. Ambulatory care sensitive conditions are measured as the age standardized in-patient acute care hospitalization rate for conditions where appropriate ambulatory care may prevent or reduce the need for admission to hospital. For purposes of calculation, patients not treated as in-patients in acute care hospitals (i.e., those seen only in an emergency department or chronic care institution) were excluded from the sample.[113]

[113] Hospitalization rates for these conditions tend to vary depending on location. There can be large rural/urban differences, which may be due to the availability and accessibility of ambulatory or community-based services in different parts of the province.

Ontario's Effectiveness in Treating Ambulatory Care Sensitive Conditions

As the following graph illustrates, Ontario's hospitalization rate for ambulatory care sensitive conditions appears to have dropped since 1997/1998. While three years of data is too short to confirm a long-term trend, this suggests that the healthcare system is doing a better job of managing conditions in the community and avoiding hospitalizations.

Ontario Hospitalization Rate for Ambulatory Care Sensitive Conditions Over Time – 1997/1998 to 1999/2000



Source: Hospital Morbidity Database, CIHI, Census, Statistics Canada;

Health Services that Influence Ambulatory Care Sensitive Conditions

A number of Ministry initiatives contribute to more effective community-based management of ambulatory care sensitive conditions.

- In 2001/2002, the Ministry of Health and Long-Term Care provided $122 million to fund 150 agencies across the province to provide substance abuse services (excluding global funding in hospitals). Treatment services included assessment and referral, early intervention, withdrawal management, community counseling, day-evening programs, and long and short-term residential treatment. In 2000/2001, 128,000 people received addiction treatment services, an increase of 65% since 1997/1998.
- The Ministry also provides funding to 55 *Community Health Centres* ($100 million in 2000/2001) and 10 *Aboriginal Health Access Centres* throughout Ontario. These centres offer a range of primary care, illness prevention, and health promotion services to priority populations, including low income, single parents, homeless, and new immigrants. Many program priorities are directly linked to ambulatory care sensitive conditions, including diabetes education, exercise groups, smoking cessation, and campaigns to reduce the likelihood of falls and promote bicycle safety.
- The *Diabetes Strategy*, initiated in 1992, focuses on wellness and health promotion. Promotional activities include three initiatives: Diabetes Complications Prevention Strategy, the Northern Diabetes Health Network, and the Southern Ontario Aboriginal Diabetes initiative.

- In the future, the *Plan of Action for Asthma* will develop integrated initiatives to reduce the mortality, morbidity, and costs related to asthma. These include: educating healthcare professionals on best practices, improving the education of children in schools, developing education, treatment, and management programs in primary care settings, redirecting asthma patients to primary care to reduce emergency unit utilization and hospital admissions, and developing policies for indoor air quality.
- For a second year in a row, Ontario is the only jurisdiction in North America to offer a universal immunization program at no cost to its citizens.
- The Ministry's *Emergency Services Strategy* is providing a number of programs that address factors affecting emergency departments, ranging from prevention activities to support for additional beds.
- *Telehealth Ontario* provides access to teletriage and health information for all Ontarians 24 hours a day, 7 days a week.

Related Indicators

5. Change in Life Expectancy
11. Access to 24/7 First Contact Health Services
12a. Admissions to Publicly-Funded Home Care Services per capita
12b. Admissions to Publicly-Funded Home Care Services per capita 75+

13. Public Health Surveillance and Protection

13a. Tuberculosis Incidence Rate

Overview

Tuberculosis (TB) is an infectious disease, caused by mycobacterium complex (ie. *Mycobacterium tuberculosis, Mycobacterium bovis excluding BCG strain, or Mycobacterium africanum*) that can be transmitted from person to person. This serious public health problem has regained prominence in recent years. This is because tuberculosis is becoming more difficult to treat, and pockets of Ontario's population are still at increased risk of TB infection and disease. Tuberculosis rates are highest among people born in countries where TB is common.[114] TB rates are also higher in First Nations populations and the elderly.[115] The province's rates reflect both provincial disease control policies, as well as federal government immigration practices and related medical screening.

Ontario uses tuberculosis incidence rates to assess the impact of disease control strategies, such as disease surveillance, early case finding, complete case management, and the provision of tuberculosis medication. The province's goal is to maintain a lower incidence rate, which will reduce the risk of transmission and improve health outcomes for Ontarians.

The incidence rate of tuberculosis is the rate of new cases reported in a given year, expressed per 100,000 population. A case of tuberculosis is one in which the organism (*M. tuberculosis, M. bovis, M. africanum*) is demonstrated on culture or, in the absence of bacteriological proof, is clinically compatible with active tuberculosis. For example, these cases may have chest x-ray changes compatible with active tuberculosis, active extrapulmonary tuberculosis, or pathologic or post-mortem evidence of active tuberculosis.

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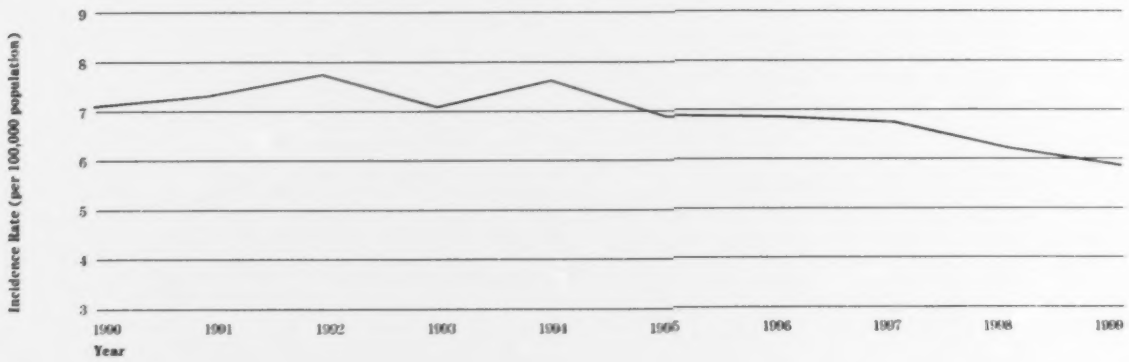
[114] Health Canada Notifiable Diseases, *Tuberculosis*, 1996.
[115] Ibid.

Ontario's Tuberculosis Incidence Rates

Ontario's incidence rate of tuberculosis has declined over the past 10 years. However, given the emergence of strains that are resistant to the traditional antibiotics for TB and the potential health impact of this disease, Ontario must remain vigilant to sustain the downward trend.

Ontario Incidence Rate of Tuberculosis Over Time – 1990 to 1999



Source: Canadian Tuberculosis Reporting System (CTBRS), Health Canada

Health Services that Influence Tuberculosis Incidence Rates

Ontario supports several initiatives to control tuberculosis and reduce incidence rates.

- Public health services continue to monitor the incidence of tuberculosis to identify trends and potential outbreaks, and use this information to develop appropriate control measures.
- All Boards of Health in Ontario are required to implement effective tuberculosis control and prevention programs, and ensure all persons with active tuberculosis complete the prescribed treatment through Directly Observed Therapy (DOT) or other appropriate intervention.
- Ontario also provides drugs for the treatment of tuberculosis infection and disease free of charge to all its residents.

13b. Reported HIV Diagnoses

Overview

Human Immuno-Deficiency Virus (HIV) is a life-threatening, chronic disease that has no cure and a profound impact on both individual health and the healthcare system. An increase in HIV prevalence will affect health needs and put more pressure on the resources of a number of health programs, such as drug programs, community-based AIDS education and support programs, primary care physicians, HIV outpatient clinics, and long-term care/supportive housing.

By monitoring reported HIV diagnoses, the healthcare system can identify different epidemiological patterns of HIV infection, and use that information to predict healthcare needs and utilization costs.

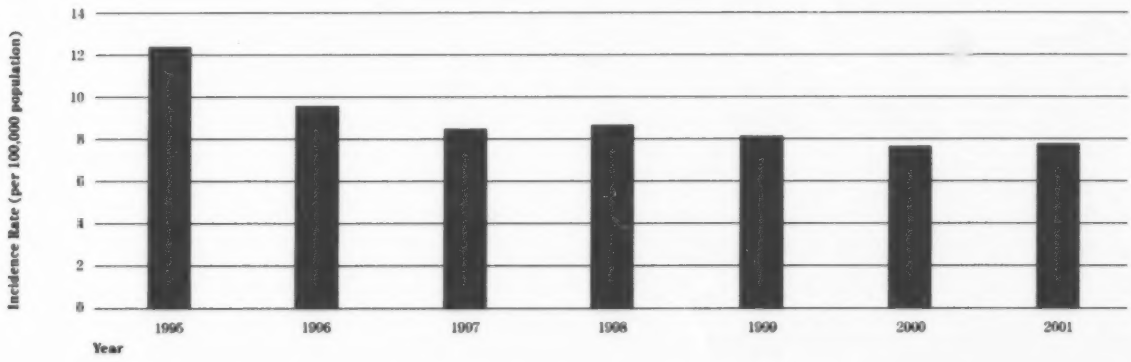
The diagnoses rate of HIV is defined as the estimated number of reported HIV infection diagnoses, based on new positive HIV test reports, stated as a rate per 100,000 population. The number of new HIV diagnoses is a function of both HIV incidence and HIV testing patterns.

There is an average three-year lag between the time when someone becomes infected with HIV and when that person is diagnosed. That means that the number of positive HIV test reports in a given year may include not only people infected in that year, but people infected in previous years. Although these numbers are useful in tracking the HIV prevalence, changes in the numbers/rates of reported positive tests must be interpreted with caution. The rate of increase varies from year to year depending on factors such as specific epidemiological outbreaks, changes in tracking/surveillance, and reporting delays/removal of duplicate reports.

Reported HIV Diagnoses[116] *in Ontario*

The rate of new HIV diagnoses in Ontario declined steadily from 1995 to 2000. Since that time, the number of new diagnoses has remained relatively constant.

Ontario Rate of Reported Diagnoses of HIV Over Time – 1995 to 2001



Source: Health Canada. HIV and AIDS in Canada: Surveillance Report to Dec 31, 2001. Division of HIV/AIDS Epidemiology and Surveillance[117] Centre for Infectious Disease Prevention and Control, 2002. CIHI.

[116] This report provides information only on those tested for HIV in a given year and does not represent the total number of persons infected with HIV. The number of HIV test reports in a given year is composed partly of individuals infected in that year, but also of individuals who may have been infected in previous years. Some individuals infected in a given year will be diagnosed (tested positive for HIV) in that year, but the majority will not be diagnosed until a subsequent year. Therefore, the relationship between HIV incidence and positive HIV test reports is determined by HIV testing behaviour. Positive HIV test reports should not be referred to as incidence rates, but rather as new diagnoses.

[117] Changes to the number of reported HIV positive tests as well as observed trends must be interpreted with caution. There are a number of factors that may contribute to changes in reported HIV positive tests. In addition to changes in the number of new infections per year, other factors include changes in testing patterns (i.e. who comes forward for testing and when), improved duplicate removal, and reporting delays. Duplicate test removal varied for the period 1985-1994, and annual trends for this period have not been displayed in this report as comparisons between years may not be valid.

Health Services that Influence New HIV Diagnoses

The Ministry of Health and Long-Term Care has several initiatives designed to monitor HIV diagnoses and influence the rate of new infections:

- Staff continuously examine the incidence, distribution, and control of HIV in Ontario to identify any geographical or population increases in incidence, provide targeted quality services, and assess whether community mobilization and additional resources are required.
- The Ministry's work is supported by the Ontario Advisory Committee on HIV/AIDS (OACHA), which combines this data with other epidemiological and environmental information, to recommend changes to HIV-related policies and programs to the Minister of Health and Long-Term Care.
- The Ministry provides funding for the community-based *AIDS Education and Support Program*, and the *Ontario HIV Treatment Network*. These programs provide HIV prevention information in settings accessible to populations at risk for HIV infection, fund research, and monitor treatment trends.

Related Indicators

1a. Life Expectancy
1b. Disability-Free Life Expectancy (DFLE)
13d. Chlamydia Incidence Rate

13c. Verotoxogenic E. coli Incidence Rate

Overview

Verotoxogenic *Escherichia coli* (VTEC) continues to be an important cause of reported intestinal disease in Ontario.[118] The bacteria is primarily food-borne, but VTEC can also be transmitted through person-to-person contact and in water. Factors that contribute to the incidence of VTEC include: the amount of bacteria in raw and prepared beef products, the level and knowledge of food handling practices, and access to education programs on food handling practices. The potential complications from VTEC include Hemolytic Uremic Syndrome (HUS), which occurs in approximately 2% to 7% of VTEC cases. HUS is more likely to affect infants and the elderly, and is potentially life threatening.[119] Each year VTEC and HUS lead to some deaths in Ontario.

By monitoring the incidence rate of VTEC, Ontario can identify any potential outbreaks, as well as the need for better food handling and/or water purifying practices and education.

The VTEC incidence rate is defined as the number of confirmed cases reported by year per 100,000 population. A case is confirmed by laboratory testing which isolates verotoxin producing *E. coli* from an appropriate clinical specimen, regardless of whether symptoms were present.

VTEC Incidence Rates in Ontario

The recent outbreak in Walkerton and subsequent media attention has created the perception that VTEC rates are increasing in Ontario. However, as the following graph shows, this is not the case. Ontario's overall incidence rate of VTEC steadily declined up to 1999. Provisional data show a spike in VTEC incidence in 2000, which may, in part, be attributable to the Walkerton outbreak.[120] However, these data also indicate that the overall downward trend resumed in 2001, with incidence rates falling to a new seven-year low.

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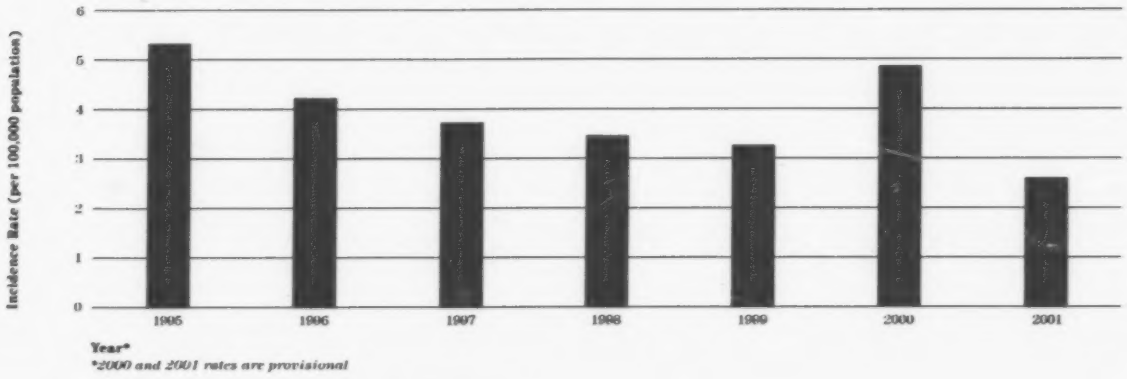
[118] Health Canada, *Verocytotoxigenic Escherichia Coli Infection in Dairy Farm Families*, Canada Communicable Disease Report, February, 1998.

[119] Health Canada Notifiable Diseases, *Verotoxogenic E. coli*, 1996.

[120] In May 2000, Walkerton's drinking water system became contaminated with the *Escherichia coli* O157:H7 bacteria. More than 2,300 people became ill. – Ministry of the Attorney General, *Part 1 Report of the Walkerton Inquiry*, January 18, 2002.

Incidence Rates of Verotoxogenic E. Coli Over Time in Ontario – 1995 to 2001



Source: Notifiable disease reports, Health Canada, CIHI.

Health Services that Influence VTEC Rates

The decreasing trend in VTEC rates suggests that the Province's VTEC prevention activities (e.g., improvements in food handling practices) may be having an impact. However, because of the seriousness of this disease and the associated treatment costs and potential years of life lost, the province must remain vigilant, and continue to invest in monitoring, prevention, and treatment programs.

- Ontario promotes its Mandatory Health Programs and Services Guidelines for the control of infectious diseases and food safety programs to reduce the incidence of intestinal diseases.
- Ongoing research is being conducted in Walkerton to assess the long-term effects of VTEC, and help improve treatment regimes.
- Ontario supports "best practices" in healthy food-handling procedures for Ontario's food industry and its customers.

13d. Chlamydia Incidence Rate

Overview

Chlamydia, the most prevalent sexually transmitted disease in Canada,[121] is most commonly diagnosed in females between the ages of 15 and 24.[122] Left untreated, chlamydia may result in ectopic pregnancies, pelvic inflammatory disease in women, epididymitis in males, and infertility in both sexes.[123]

By monitoring the incidence rate of chlamydia, Ontario can assess the quality of its surveillance and protection systems, and the effectiveness of prevention and sex education efforts. The chlamydia rate also serves as a warning of changes in risk behaviour, and can identify priorities for disease prevention and control. Efforts that are successful in lowering chlamydia infection rates should improve health for Ontarians, and reduce healthcare costs and hospitalizations.

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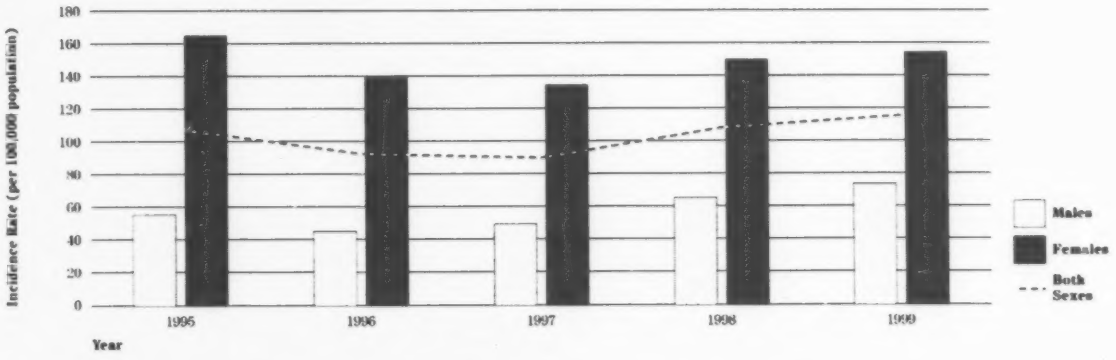
[121] Health Canada, *Genital Chlamydia in Canada*, May, 1999.
[122] Ibid.
[123] Ibid.

The chlamydia incidence rate is calculated as the rate of confirmed cases of reported genital infections by calendar year per 100,000 population. A confirmed case of infection is defined based on laboratory detection of *Chlamydia trachomatis*.

Chlamydia Incidence Rates in Ontario

The incidence of chlamydia has been rising in Ontario since 1997. A new diagnostic test, the nucleic acid amplification test (NAAT), introduced in 1997 may have accounted for the initial increase in detection, and higher incidence rate. Although the effects of this test are no longer considered a factor, the incidence rate has continued to rise.

Ontario Male vs Female Chlamydia Incidence Rate Over Time – 1995 to 1999



Source: Notifiable disease reports, Health Canada, CIHI. Statistics Canada, Census.

Health Services that Influence Chlamydia Rates

- The Ministry of Health and Long-Term Care provides medications to treat chlamydia free of charge.
- Ontario Boards of Health are required to provide a minimum of four hours per week per 150,000 or less population to prevent, diagnose, and treat sexually transmitted diseases.
- The Boards of Health also work with Ontario Boards of Education to ensure programs are in place to teach school-age children about sexually transmitted diseases and appropriate preventive methods.

Related Indicators

13b. Reported HIV Diagnoses

13e. Exposure to Environmental Tobacco Smoke

Overview

Exposure to environmental (second-hand) smoke is linked a number of adverse health effects, including heart disease, lung cancer and nasal sinus cancer. Exposure to second-hand tobacco smoke can also have serious effects on children and is linked to lower birth weights, sudden infant death syndrome (SIDS), bronchitis, pneumonia, fetal growth impairment, and increased rates of asthma and other respiratory tract problems.[124]

[124] Report of the Ontario Tobacco Research Unit. *Protection from second-hand tobacco smoke in Ontario. A Review of evidence regarding best practices*. Toronto, 2001.

Smoking, including exposure to second-hand tobacco smoke, creates a significant burden on health services and resources. Smoking accounts for close to a quarter of all cancer deaths, about a third of heart disease deaths, and is a factor in roughly four-fifths of chronic obstructive lung disease cases.[125] The direct health costs associated with tobacco are almost $1 billion a year.[126] Smoking and its related complications not only increase the burden of disease and illness, but morbidity and early mortality as well.

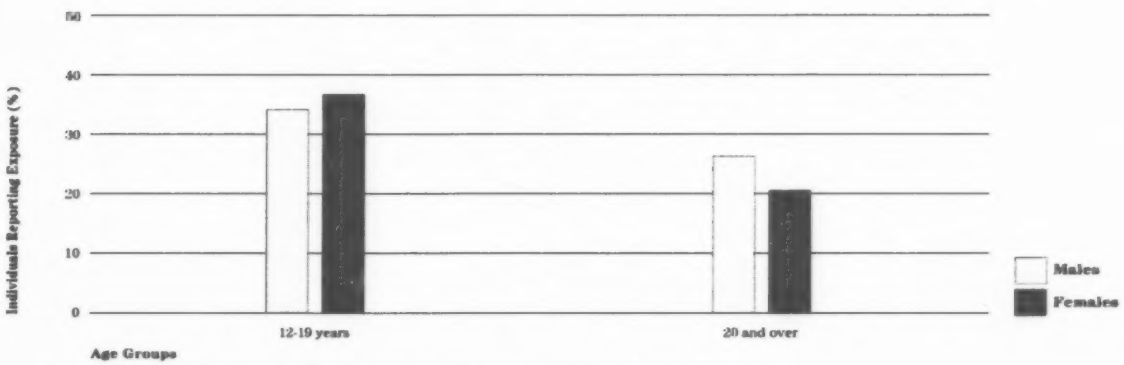
By measuring ETS, Ontario can assess the effectiveness of the public health system in protecting non-smokers from exposure to tobacco smoke in areas such as public spaces and work places. It can also identify the need for broader policies (i.e., beyond the influence of public health) to manage tobacco smoke in public places, workplaces and the home.

Exposure to ETS is defined as the proportion of non-smoking Ontarians age 12 and over regularly exposed to environmental tobacco smoke on most days in the month preceding the survey.

Exposure to Environmental Tobacco Smoke in Ontario

As the following graph illustrates, about 34.2% of Ontario males and 36.7% of Ontario females between the ages of 12 and 19 reported being exposed to environmental tobacco smoke in the month before they were surveyed.[127] A significant percentage of adult males and females also report being exposed to environmental tobacco smoke. The key contributor to ETS is the prevalence of daily and occasional smoking among Ontarians. In 2000/2001, 24.5% of the general population were daily or occasional smokers.[128]

Self-Reported Exposure to Environmental Tobacco Smoke in Ontario in the Last Month Between Males and Females



Source: Canadian Community Health Survey, Cycle 1.1 – 2000/2001, Statistics Canada

Health Services that Influence ETS

Ontario is taking steps required to protect its population from exposure to second-hand smoke.

- The Ministry's *Ontario Tobacco Strategy* received $10 million in renewed funding in 1999 to focus on the goals of prevention, protection from second-hand smoke, and cessation. Programs to support these goals are in place including: mass media campaigns, smoking cessation, school-based projects, and community-based initiatives. Many of these programs are addressing exposure to environmental tobacco smoke in local communities.

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[125] Expert Panel Report. *Actions Will Speak Louder Than Words, 1999*

[126] Ibid.

[127] Statistics Canada: *Canadian Community Health Survey*, 2000/2001

[128] The Ontario prevalence rate of 24.5% is higher than the rate of 20% expressed in *The National Strategy: Moving Forward – The 2002 Progress Report on Tobacco Control*. This is because this report includes daily and occasional smokers, whereas *The National Strategy* includes only daily smokers.

- Boards of Health provide services, education and advocate for change.
- Funding is also provided to the Ontario Tobacco-Free Network to support smoke-free by-law development in local communities.[129]

Related Indicators

Smoking is very strongly connected to cancer, heart disease, and stroke.

2. Infant Mortality
3. Low Birth Weight
5. Change in Life Expectancy
7. Reduced Burden of Disease, Illness and Injury
14a. Percent Teenaged Smokers

14. Health Promotion and Disease Prevention

14a. Percent Teenaged Smokers

Overview

Tobacco use is the leading cause of preventable illness and death in Canada.[130] Health Canada estimates that smoking is responsible for more than 45 000 deaths each year.[131] In Ontario alone, there are 12,000 premature deaths per year from smoking.[132] Smoking also contributes to other conditions such as stroke, and it accounts for roughly one third of heart disease deaths, a quarter of all cancer deaths, and four-fifths of chronic obstructive lung disease cases.[133] Smoking and its related complications create a very heavy burden of morbidity and early mortality for people affected. Ontario's healthcare system spends a substantial portion of its healthcare resources (about $1 billion a year) to treat smoking-related illnesses.[134]

Because of the addictive nature of nicotine, youth smoking is of particular concern. About four out of every five people who try smoking eventually become habitual smokers. By monitoring teenage smoking rates, Ontario can assess the effectiveness of existing smoking prevention programs and policies, and identify the need for new strategies.

The teenage smoking rate is defined as the proportion of the population ages 12 to 19 who report they are current daily and occasional smokers at the time of the interview, expressed as a percentage.[135]

Ontario's Teenage Smoking Rates

Over the past four years, the smoking rate in teenage males has decreased, but the smoking rates in teenage girls has increased. Caution should be exercised when interpreting this graph. Evidence suggests that true changes in population behaviours require a greater period of time than four years. More study is required to determine whether or not the patterns displayed here are indicative of a longer-term trend.

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[129] *Evaluating the Renewed Ontario Tobacco Strategy - Report on the Initial 18 Months Ending March 2001*, Ontario Tobacco Research Unit, Toronto, 2002.

[130] Expert Panel Report, *Actions Will Speak Louder Than Words, 1999.*

[131] Health Canada, the Scoop, 2002

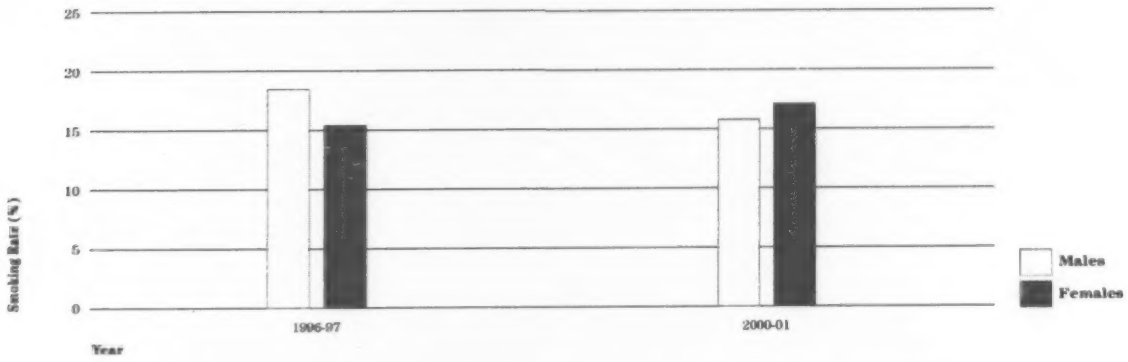
[132] Expert Panel, *Actions Will Speak Louder Than Words*, 1999

[133] Ibid.

[134] Ibid.

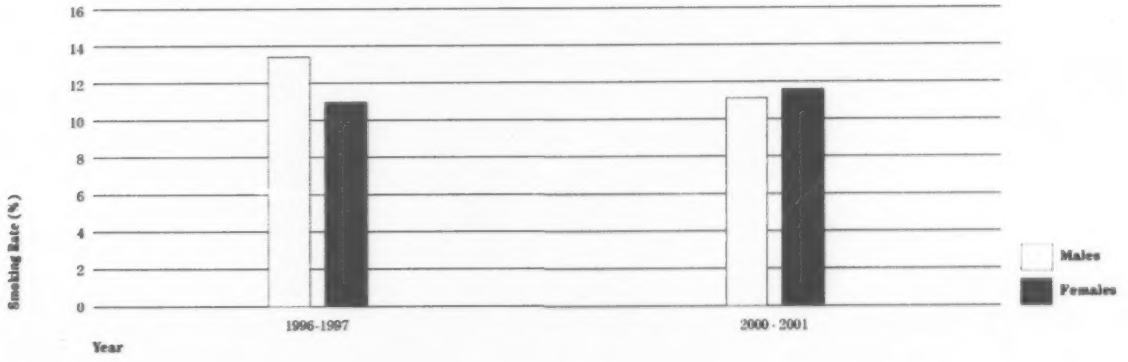
[135] Daily smoking refers to smoking at least one cigarette per day for each of the 30 days preceding the survey. Occasional smoking refers to smoking at least one cigarette during the past 30 days preceding the survey, but not every day.

Prevalence of Current Daily and Occasional Youth Smoking (Ages 12-19) Between Males and Females in Ontario Over Time



Source: Canadian Community Health Survey 2000; National Population Health Survey, 1996,[16] Statistics Canada

Prevalence of Daily Youth Smoking (Ages 12-19) Between Males and Females in Ontario Over Time



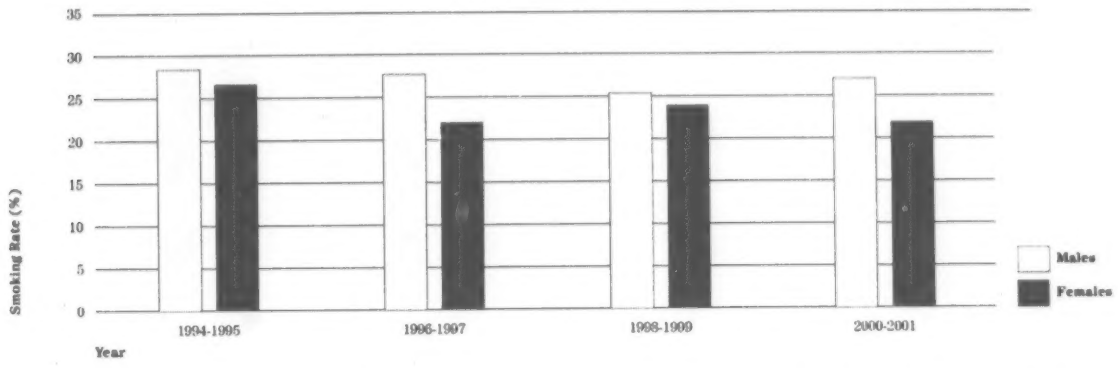
Source: Canadian Community Health Survey 2000; National Population Health Survey, 1996,[17] Statistics Canada

Unlike youth smoking rates, the overall smoking rate in females of all ages is declining, while the rate in men is remaining relatively constant.

[16] Individuals living on military bases or First Nation reserves are excluded from the health survey and are implicitly treated as having the same average rates as the rest of the population.

[17] Ibid.

Comparison of Ontario Male vs Female Current Daily and Occasional Smoking Rate for All Ages Over Time



Source: Canadian Community Health Survey 2000; National Population Health Survey, 1994, 1996, 1998,[138] Statistics Canada

These graphs do not illustrate the variation in smoking rates among Ontario's sub-populations, that need to be addressed. For example, the rate of smoking among Ontario First Nations was 2.5 times greater than the general population rate identified through Statistics Canada's National Population Health Survey.[139] Continued high adult smoking rates have a direct effect on healthcare utilization, and young smokers of today will affect utilization in the future. The resulting financial burden for our health system is significant.

Health Services that Influence Teenage Smoking Rates

Smoking remains a main focal point for Ontario's health strategy.

- Low taxation and cigarette prices are a significant factor in cigarette consumption, particularly by price-sensitive youth. According to research quoted in the *U.S. Surgeon General's Report, 1992*, for every 10% increase in price, consumption generally decreases by 4%. In the June 2002 budget Ontario introduced an additional $5 provincial tax on each carton of cigarettes sold in Ontario. This measure, combined with a parallel $3.50 federal tax hike increases prices by about 20% and is expected to decrease consumption by 8%.
- Ontario's Tobacco Strategy has been in place since 1992, and funding for the strategy was increased by $10 million beginning in 1999. Preliminary evaluation results of programs funded since 1999 are encouraging. Evidence from other jurisdictions with similar but higher funded programs, such as California, shows that significant decreases in smoking prevalence are achievable with sustained funding and comprehensive programming.[140]
- The Youth Tobacco Team (YTT) was launched by the Minister of Health and Long-Term Care in November 2001. The YTT is a nine member advisory group of 14 to 18 year olds who provide the youth perspective on smoking. On August 7th, 2002 the Minister met with representatives from the Ontario Lung Association and the Youth Tobacco Team (YTT) to discuss ways to curb tobacco use and achieve greater levels of smoking cessation among youth. Such discussions are part of the Ministry of Health and Long-Term Care's ongoing priority to prevent tobacco use and assist young people to quit smoking.

[138] Individuals living on military bases or First Nation reserves are excluded from the health survey and are implicitly treated as having the same average rates as the rest of the population.

[139] The Ontario First Nations Regional Health Survey, May 28, 1998.

[140] California Department of Health Services, *California Tobacco Control Update*, 2000.

Related Indicators

Smoking is very strongly connected to cancer, heart disease, and stroke.

5. Change in Life Expectancy
7. Reduced Burden of Disease, Illness and Injury
13e. Exposure to Environmental Tobacco Smoke

14b. Physical Activity

Overview

Maintaining an active lifestyle has long been associated with a wide range of health benefits. Many studies have shown regular physical activity confers major heart health benefits, helps develop healthy muscles, bones, and joints, protects against depression, anxiety, stress, and obesity, and helps maintain function and independence in older adults.[141]

Physical activity benefits children and adolescents as well as adults. It has been shown to play a role in maintaining a healthy lifestyle, preventing physical and psychological problems, and improving behavioural development.[142]

On the other hand, insufficient physical activity contributes to an increased risk of obesity, and in Canada is estimated to account for 36% of heart disease, 27% of osteoporosis, 20% of strokes, hypertension, type 2 diabetes, and colon cancer, and 11% of breast cancer.[143] In fact, being unfit increases the risk of premature death at a level almost on par with smoking.[144] This is a concern to people of all ages. Physical activity is a major modifiable risk factor, and successful promotion programs should not only lead to greater health benefits, but also reduce the financial burden on healthcare services. Researchers estimate that a 10% increase in the proportion of Canadians who are physically active would save Ontario about $150 million each year in healthcare costs associated with coronary heart disease, stroke, type 2 diabetes, colon cancer, breast cancer, and osteoporosis.[145]

Youth is the period in life most associated with the onset of smoking, alcohol, and drug consumption, and a more sedentary lifestyle (*Health Canada, 1999*). Many disabilities and chronic health problems that arise in adulthood can be traced to negative health behaviours developed during childhood and adolescence. This underscores the need to promote increased physical activity levels in youths as well as adults.

Given that as many as 51.5% of its citizens are not active enough to achieve the benefits of physical activity,[146] Ontario recognizes the need to be pro-active in promoting a more active lifestyle. By monitoring levels of physical activity, Ontario can assess the impact of current programs, and identify new strategies to address this issue.

The definition of physical activity is the proportion of the population aged 12 and over who rate themselves as "active" or "moderately active", expressed as a percentage.

Physical Activity in Ontario

From the graph below, it appears that, over time, the population's level of physical activity has increased. Between 1994 and 2000, Ontario males who responded to the Canadian Community Health Survey consistently reported being more active than females did, but the gap between the genders appears to be closing with time.

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[141] Health Canada, *Canada's Physical Activity Guide to Healthy Active Living*, 1998.

[142] The Canadian Parks and Recreation Association, *Impact and Benefits of Physical Activity and Recreation on Canadian Youth-At-Risk*, 1995.

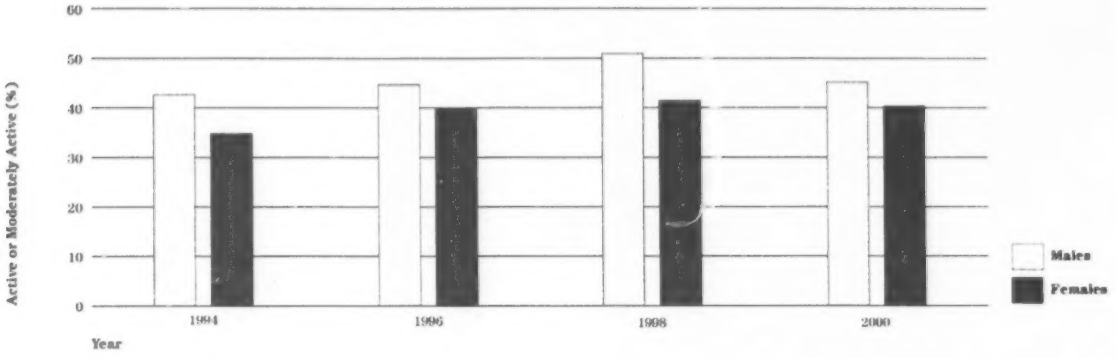
[143] Peter T. Katzmaryzk, Norman Gledhill, Roy J. Shephard: The Economic Burden of Physical Inactivity in Canada. *Canadian Medical Association Journal* 2000.

[144] Ibid.

[145] Ibid.

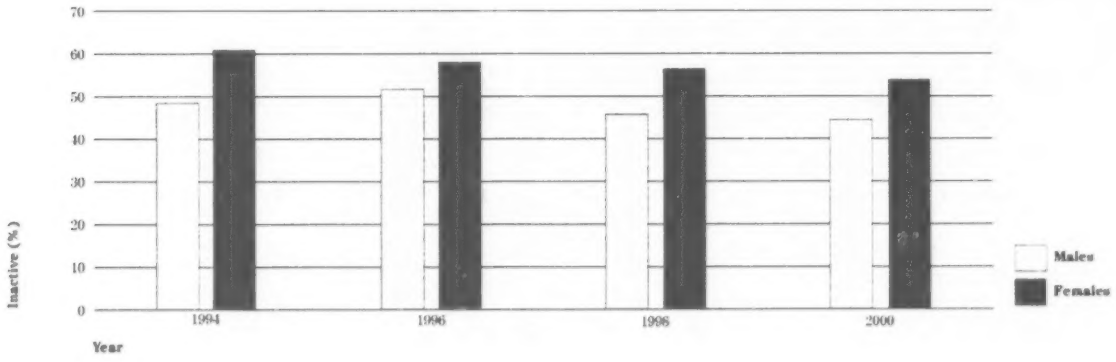
[146] Statistics Canada, *National Population Health Survey*, 1998/1999.

Ontario Males and Females Physically Active Over Time – Ages 12 and Over



Source: Canadian Community Health Survey – Cycle 1.1, 2000 National Population Health Survey, 1994, 1996, 1998,[147] Statistics Canada[148]

Ontario Males and Females Physically Inactive Over Time – Ages 12 and Over



Source: Canadian Community Health Survey – Cycle 1.1, 2000 National Population Health Survey, 1994, 1996, 1998, Statistics Canada[149]

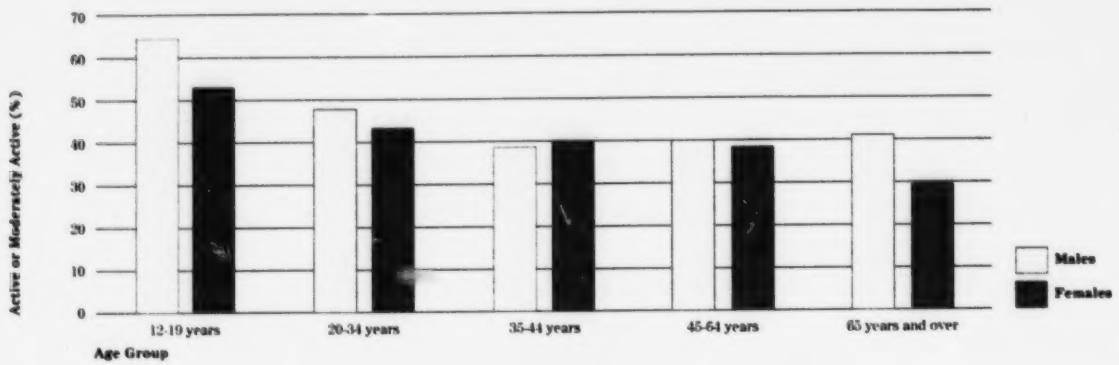
According to data on physical activity levels in Ontario, those between the ages of 12 and 19 reported being the most active and, in most age groups, men tend to consider themselves more active than did women. The findings also suggest that, as people age, their perceived activity level decreases.

[147] The differences in physical activity for both males and females over time were not significant.

[148] Individuals living on military bases or First Nation reserves are excluded from the health survey and are implicitly treated as having the same average rates as the rest of the population.

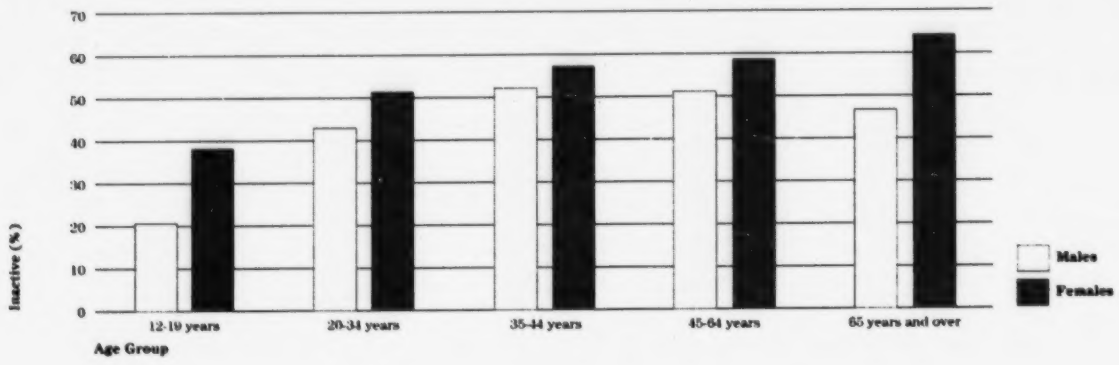
[149] Ibid.

Ontario Males and Females Physically Active Between Age Groups – 2000



Source: Canadian Community Health Survey – Cycle 1.1, 2000, Statistics Canada[150]

Ontario Males and Females Physically Inactive Between Age Groups – 2000



Source: Canadian Community Health Survey – Cycle 1.1, 2000, Statistics Canada[151]

[150] Individuals living on military bases or First Nation reserves are excluded from the health survey and are implicitly treated as having the same average rates as the rest of the population.
[151] Ibid.

Health Services that Influence Physical Activity

Ontario has been working to encourage everyone, regardless of age or gender, to be more physically active. The health system recognizes that people's ability to participate in physical activity can be affected by the environment, the accessibility of opportunities for physical activity, social influences, lifestyles, and the population's present health status.

- The *Mandatory Health Programs and Services Guidelines (1997)* define the programs and services that all Boards of Health must provide. Healthy body weights, healthy eating, nutrition and physical activity are important components in three public health programs: Chronic Disease Prevention, Child Health, and Reproductive Health, which are made available to all Ontario residents.
- Ontario has implemented a provincial physical activity strategy called *Active Ontario*. The goal is to increase the number of Ontarians who are physically active enough to benefit their health.
- Many initiatives have been taken in school communities. Since 1997, the Ministry of Health and Long-Term Care has provided funds to the Ontario Physical and Health Education Association (OPHEA) for a broad based initiative known as *Active Schools*, which helps school communities promote physical activity. The Ministry also supports the Curriculum and School-Based Health Resource Centre, whose mandate is to address physical activity and other health risk factors in Ontario's elementary and secondary schools. In addition, in 2001/2002, the Active School Communities Roundtable was initiated in Ontario as part of a national collaborative effort to increase participation in physical activity in school communities.
- The Ontario Heart Health Program (OHHP), which comprises 37 provincial and local Heart Health projects, provides health promotion and prevention programs to Ontarians designed to promote physical activity and healthy eating, and prevent tobacco use.
- Ontario is also supporting the development of a Physical Activity Resource Centre, which will focus on the adult population and families and become part of the Ontario Health Promotion Resource System (OHPRS).

Related Indicators

5c. 30-Day Acute Myocardial Infarction In-Hospital Mortality Rate
5d. 30-Day Stroke In-Hospital Mortality Rate
7b. Potential Years of Life Lost Due to Lung, Prostate, Breast, and Colorectal Cancer, AMI, Stroke, Suicide, and Unintentional Injury
d. Prevalence of Diabetes
14c. Body Mass Index

14c. Body Mass Index

Overview

The World Health Organization has identified overweight and obesity as a major neglected public health issue. Obesity is a risk factor for a number of chronic illnesses, including heart disease, type 2 diabetes, asthma, arthritis, and some types of cancer. Obesity has also been linked to a variety of reproductive complications, and the risk of death rises with increasing body weight. Obesity can also have an impact on people's quality of life, limiting their mobility and physical endurance. It is a factor in social, academic, and job discrimination.

Overweight and obesity are caused by a diverse combination of factors including genetic, metabolic, behavioural, environmental, cultural and socioeconomic influences. Overweight and obese children and adolescents are at risk of becoming overweight and obese adults.

Obesity places a large fiscal burden on the healthcare system. For example, in 1997, the total direct cost of obesity in Canada was estimated to be over $1.8 billion.[152]

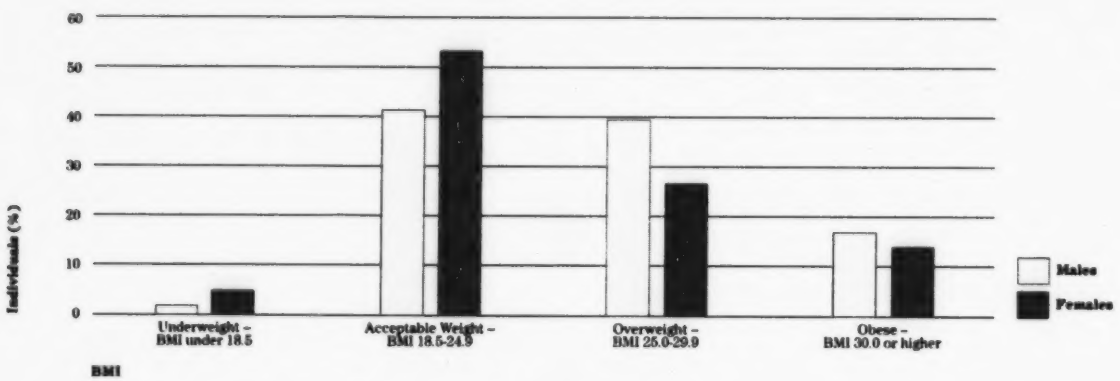
By monitoring the population's weight, Ontario can assess the impact of existing programs to control obesity, and identify the need for new strategies.

Body Mass Index (BMI) is the most common method of determining whether an individual's weight is in a healthy range. BMI is based on self-reported height and weight, and calculated for persons 20 to 64 years old, excluding pregnant women. Due to different rates of growth for people under 20 years of age, the standard BMI is not considered a suitable indicator for this group. BMI is calculated as weight (in kilograms) divided by height (in meters) squared.

Ontario's Body Mass Index

Findings from the 2000/2001 Canadian Community Health Survey suggest that the majority of women in Ontario are at an acceptable weight. However, 56.4% of Ontario males are rated as overweight or obese. These findings are slightly lower than but consistent with trends previously demonstrated through three National Population Health Surveys, conducted from 1994 through 1998. As Ontario's population continues to grow, the number of overweight and obese people will likely increase.

Self-Reported BMI for Individuals 20-64 Years Old in 2000/2001 Between Males and Females in Ontario



Source: Canadian Community Health Survey – Cycle 1.1, 2000, Statistics Canada[153]

Health Services that Influence BMI

Ontario has a number of initiatives designed to promote healthy body mass.

- Body Mass Index is one of the tools used to set objectives in the Mandatory Health Programs and Services Guidelines (1997). Healthy weights, healthy eating, nutrition and physical activity are important components of three public health programs: *Chronic Disease Prevention, Child Health, and Reproductive Health*. These programs and services are available to all Ontario residents.

[152] Birmingham, C.L. et al: *The Cost of Obesity in Canada*, Canadian Medical Association Journal 160: 483-488, 1999.
[153] BMI calculations do not include pregnant women.

- The *Physical Activity Strategy – Active Ontario*, implemented in 1998, is a joint partnership of the Ministry of Health and Long-Term Care, Ministry of Tourism and Recreation, and related non-government agencies. The strategy's goal is to improve the reach and effectiveness of physical activity education programs in a variety of community settings such as schools, workplaces, homes, the recreation and sports environment and the healthcare system.
- Funding is also provided to the *Nutrition Resource Centre (NRC)*, to provide support and resources to nutrition professionals who implement four provincial nutrition programs in order to better reach Ontarians with healthy eating messages.

Related Indicators

5c. 30-Day Acute Myocardial Infarction In-Hospital Mortality Rate
5d. 30-Day Stroke In-Hospital Mortality Rate
7b. Potential Years of Life Lost Due to Lung, Prostate, Breast, and Colorectal Cancer, AMI, Stroke, Suicide, and Unintentional Injury
7d. Prevalence of Diabetes
14b. Physical Activity

14d. Immunization for Influenza

Overview

Influenza is a serious health problem, particularly in the elderly. It creates significant morbidity, and places pressure on the healthcare system. Each year, a significant number of older people die from complications of influenza.

Vaccines can prevent infection or reduce the severity of symptoms. Higher rates of influenza immunization in those 65 years and over may lead to improved health for the Ontario elderly, reducing the severity of the disease and the incidence of complications by 50-60%, and reducing deaths from influenza by approximately 80%. The major factors that contribute to high rates of influenza immunization include: promotion efforts, education programs targeting all age groups, and providing free influenza vaccine to all Ontarians.

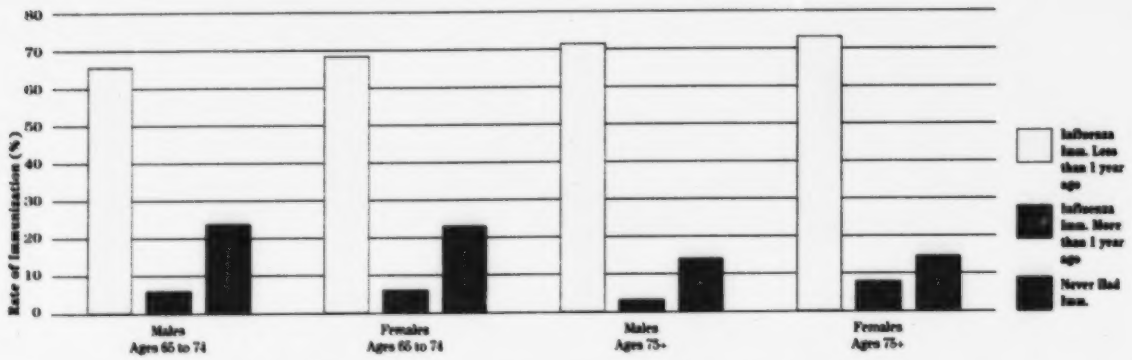
Measuring immunization rates provides information on the success of Ontario's healthcare system in protecting the elderly from the serious complications of influenza. It also provides information that can be used to identify priority areas for influenza prevention and control.

The immunization rate for influenza for those age 65 years and over is calculated based on those who report having had an influenza immunization shot less than one year ago, more than one year ago, and on those who report never having had an immunization shot.

Influenza Immunization Rates in Ontario

Ontario's influenza immunization rates are quite high. They tend to be higher in women than in men, and the proportion of older people who are immunized increases with age.

Ontario Incidence Rate of Influenza Immunization in Individuals Age 65-74 and 75+ in 2000



Source: Canadian Community Health Survey (sub sample)– Cycle 1.1, 2000, Statistics Canada[154]

Health Services that Influence Influenza Immunization Rates

- Ontario has provided free influenza vaccine since 1988 for everyone at high-risk of complications associated with influenza, including those 65 years of age and over.
- In 2000/2001, Ontario introduced the Universal Influenza Immunization Program (UIIP), the first of its kind in North America, as part of the government's ongoing commitment to health promotion and disease prevention. Under the UIIP, all Ontarians, regardless of age, are eligible to receive influenza vaccine free of charge.
- Boards of Health are required to provide programs for vaccine-preventable diseases, which include the provision and administration of influenza vaccine, immunization promotion in different settings, and vaccine storage and handling.
- The Ministry ensures that guides and protocols are kept up-to-date and incorporate the most recent vaccine recommendations.

Related Indicators

1a. Life Expectancy

[154] Due to sample size limitations, data for females age 65 to 74 reporting immunization one year or more ago, and males over age 75 reporting immunization one year or more ago should be interpreted with caution.

Conclusion

The Ministry of Health and Long-Term Care is committed to ensuring that Ontarians have access to appropriate, quality health services. At the same time, the government is striving to make the best possible use of health resources, and ensure the healthcare system is sustainable.

By carefully monitoring certain common performance indicators, the Ministry can "measure" the population's health and the impact of health services on health, health outcomes and resources.

The province will use this information to identify new trends in health and illness, anticipate demand for services, improve existing programs, develop new ones, and allocate resources. It will also share this information with the people of Ontario so they can understand how publicly funded health services are delivered and whether they are meeting their goals and objectives. This knowledge will help Ontarians make more informed choices about their health and healthcare.

This is Ontario's first report on the 14 common performance indicators. It represents a unique effort to assess the performance of the healthcare system, and make it transparent to the people who pay for healthcare. With time and more experience with the indicators, the performance reports will become stronger and more robust, and the information and trends will be more useful. The Ministry of Health and Long-Term Care will use the performance monitoring and reporting process to ensure accountability for healthcare resources, and to improve health and healthcare in Ontario.

Appendix

Technical Notes

Indicator 1. Life expectancy

1a. Life Expectancy

Calculation: Life expectancy is calculated using mortality rates with Greville's method for abridged life tables, using five-year age groupings of both population and mortality rate.

Exclusions: Non-residents of Canada are excluded from the deaths and population estimates used for the life tables.

Source: Statistics Canada, Vital Statistics, Birth and Death Databases and Demography Division (population estimates).

References: Ng E., Gentleman J. The impact of estimation method and population adjustment on Canadian life table estimates in Health Reports. 1995; 7(3): 15-22.

Community Health Indicators – Definitions and Methods, Statistics Canada website - www.statcan.ca/english/IPS/Data/82-221-XIE.htm; Statistics Canada Catalogue 84-214-XPE; Statistical Report on the Health of Canadians, Advisory Committee on Population Health (ACPH), 1999.

1b. Disability-Free Life Expectancy (DFLE)

Calculation: Disability-free life expectancy is calculated using mortality and morbidity rates with Sullivan's method. It represents the number of years an average individual would be expected to live free of moderate or severe disability, starting from birth (for DFLE at birth) or at age 65 (for DFLE at age 65), on the basis of the mortality statistics and disability prevalence patterns by age and sex for a given observation period, typically a calendar year.

Exclusions: Non-residents of Canada are excluded from the deaths and population estimates used for the life tables. In addition, individuals living on military bases or First Nation reserves are excluded from the health survey and are thus implicitly treated as having the same average rates of disability as the rest of the population.

Source: Statistics Canada, Vital Statistics, Birth and Death Databases and Demography Division (population estimates), and the 1996 Census (20% sample).

References: Sullivan, D. A single index of mortality and morbidity. Health Services and Mental Health Administration Health Reports, 86(4), (347-354) 1971.

Mathers, C. Health Expectancies in Australia 1981 and 1988. Australian Government Publishing Service, Canberra, 1991.

Indicator 2. Infant Mortality

Numerator:	Number of deaths (excluding estimated number weighing less than 500 grams at birth) at less than one year of age, in a given year.
Denominator:	Total live births weighing at least 500 grams in a given year.
Calculation:	(Numerator/denominator) x 1,000 (reported as a rate per 1,000 live births).
Exclusions:	Births to mothers not resident in Canada, and infant deaths to non-residents of Canada. Infants born outside the province/territory of residence of their mother or infants who die outside the province/territory of their mother are included in the rates for the mother's province/territory of residence. For example, Hull, Quebec babies who die in Ontario are not counted in the infant mortality rates for Ontario; they are counted in the infant mortality rates for Quebec.
Source:	Statistics Canada, Vital Statistics, Births and Deaths Databases.
References:	Community Health Indicators – Definitions and Methods, Statistics Canada website - www.statcan.ca/english/IPS/Data/82-221-XIE.htm; Statistical Report on the Health of Canadians, Advisory Committee on Population Health (ACPH), 1999.

Indicator 3. Low Birth Weight

Numerator:	Number of live births less than 2,500 grams and greater than or equal to 500 grams within the specified year.
Denominator:	Total live births with known birth weight at least 500 grams within the specified year.
Calculation:	(Numerator/denominator) x 100 (expressed as a percentage). No adjustments were made for the age of the mother.
Exclusions:	Births with unknown birth weight; births to mothers not resident in Canada are excluded from the numerator and denominator; infants born outside the province/territory of residence of their mother are included in the rates for the mother's province/territory of residence.
Source:	Statistics Canada, Vital Statistics, Birth Database.
References:	Statistics Canada Catalogue 84F0210XPB, Births and Deaths; Community Health Indicators – Definitions and Methods, CIHI, 1995; Statistical Report on the Health of Canadians, Advisory Committee on Population Health (ACPH), 1999; Statistics Canada website - www.statcan.ca/english/IPS/Data/82-221-XIE.htm.

Indicator 4. Self-Reported Health

Numerator:	Estimated number of persons reporting excellent or very good health within a survey cycle for a given jurisdiction (response categories are excellent, very good, good, fair, poor).
Denominator:	Total population aged 12 and over in the jurisdiction.
Calculation:	(Numerator/denominator) x 100 (expressed as a percentage), with weighting adjusted to reflect non-response.
Exclusions:	Persons living on First Nation reserves and on Crown lands, residents of institutions, full-time members of Canadian Armed Forces and residents of certain remote regions are excluded from the sample. Persons less than 12 years of age are not surveyed.
Source:	Canadian Community Health Survey – Cycle 1.1 – 2000/2001, Statistics Canada; National Population Health Surveys (1994/1995 to 1998/1999), Statistics Canada.
References:	Statistical Report on the Health of Canadians, Advisory Committee on Population Health (ACPH), 1999, Health Reports, Vol. 11, No. 3 How healthy are Canadians?; NPHS and CCHS documentation and analysis found on www.statcan.ca/health_surveys, www.healthcanada.ca.

Indicator 5. Change in Life Expectancy

5a. Age-Standardized Mortality Rates for Lung, Prostate, Breast, and Colorectal Cancer, AMI, and Stroke

Calculation:	The age-standardized rate for each cancer site (colon/rectum International Classification of Diseases (ICD-9 153-154), lung (ICD-9 162), female breast (ICD-9 174), and prostate (ICD-9 185), and for acute myocardial infarction (ICD-9 410), and the subset for all strokes (ICD-9 430-432, 434, 436) is calculated by multiplying each observed age-specific death rate by the standard population in the corresponding age-group, summing the results, multiplying the sum by 100,000 and then dividing the product by the total standard population. The 1991 Canadian population is used as the standard population. Reported as a rate per 100,000 population.
Exclusions:	Deaths of non-residents of Canada.
Source:	Statistics Canada, Vital Statistics, and Demography Division.
References:	Statistics Canada Vital Statistics Death Databases.
Note:	From 1979 to 1999, the underlying cause of death was coded using ICD-9; beginning in 2000, the underlying cause of death will be coded using ICD-10, thus introducing discontinuity to the trend data.

5b. Five-Year Age-Standardized Relative Survival Rates for Lung, Prostate, Breast, and Colorectal Cancer

Calculation: Five-year survival rates were calculated using the maximum likelihood method of Estève et al. (1990). Age-standardized rates for a given cancer were calculated by weighting age-specific rates to the age distribution of all eligible patients who were diagnosed with that cancer, and reported as a percentage.

Exclusions: Restricted to cases diagnosed in 1992 that were the first primary cancer for the individual. Subjects with an unknown year of birth or death; subjects younger than 15 or older than 99 years of age at diagnosis; subjects diagnosed through autopsy or death certificate only.

Source: Statistics Canada, Canadian Cancer Registry, Canadian National Mortality Database, and Canadian and provincial life tables (1990-1992).

References: Ellison, L.F., Gibbons, L. and the Canadian Cancer Survival Analysis Group. Five-year relative survival from prostate, breast, colorectal and lung cancer. Health Reports 2001: 13(1), 23-34.

5c. 30-Day Acute Myocardial Infarction In-Hospital Mortality Rate

Numerator: Number of deaths from all causes that occur in-hospital within 30 days of first admission for an AMI among patients who meet the conditions specified for the denominator.

Denominator: Total number of AMI episodes in an 11- month period.

Inclusion Criteria:
1. Most responsible diagnosis of Acute Myocardial Infarction (ICD-9 410)
2. Admission between April 1 and March 1 of the following year (period of case selection ends March 1 to allow for 30 days of follow-up)
3. Age at admission between 20 and 105 years
4. Gender recorded as male or female
5. Admission to an acute care institution
6. Length of stay of 3 or more consecutive days and patient discharged alive

Exclusions: Records containing an invalid Health Card Number; records indicating that a provincial resident was seen in a facility outside of the province (to prevent duplicate counts); patients who had an AMI admission within one year prior to the date of the index episode; records where AMI is coded as a complication; and transfers from another acute care facility.

Calculation: A logistic regression model is fitted with age, gender, and select co-morbid conditions as independent variables. Coefficients derived from the logistic model are used to calculate the probability of in-hospital death following AMI for each case (episode). The expected in-hospital death rate is the sum of these case probabilities divided by the total number of cases, or (numerator/denominator) x 100 (expressed as a percentage). The risk adjusted mortality rate (RAMR) is calculated by dividing the observed in-hospital death rate by the expected in-hospital death rate and multiplying by the average in-hospital death rate.

Source: Hospital Morbidity Database, The Canadian Institute for Health Information (CIHI).

References: Hosmer, D.W., Lemeshow, S. Confidence interval estimates of an index of quality performance based on logistic regression models. Statistics in Medicine 1995; 14:2161-2172.

Iezzoni, L.I. The risks of risk adjustment. JAMA 1997; 278:1600-1607. National Health Service. NHS Performance Indicators: July 2000. Technical Specifications-Health Outcomes of NHS healthcare (Part 2). NHS Catalogue No. 21946. London: NHS.

Tu, J.V. et al. Acute myocardial infarction outcomes in Ontario. In Naylor CD, Slaughter PM (eds). Cardiovascular Health & Services in Ontario: An ICES Atlas. Toronto: Institute for Clinical Evaluative Sciences. 1999; 84-100.

Tu, J.V. et al. Acute myocardial infarction outcomes in Ontario (Methods Appendix). In Naylor CD, Slaughter PM (eds). Cardiovascular Health & Services in Ontario: An ICES Atlas (Technical and methods appendices). Toronto: Institute for Clinical Evaluative Sciences. 1999.

5d. 30-Day Stroke In-Hospital Mortality Rate

Numerator: The number of deaths from all causes that occur in-hospital within 30 days of first admission for stroke who satisfy the conditions listed for the denominator.

Denominator: Total number of stroke episodes in an 11- month period.

Inclusion Criteria:
1. Most responsible diagnosis of stroke ICD-9 430 (subarachnoid haemorrhage), 431 (intracerebral haemorrhage), 432 (other and unspecified intracranial haemorrhage), 434 (occlusion of cerebral arteries) or 436 (acute, but ill-defined cerebrovascular disease))
2. Admission between April 1 and March 1 of the following year (period of case selection ends March 1 to allow for 30 days of follow-up)
3. Age at admission between 20 and 105 years
4. Gender recorded as male or female
5. Admission to an acute care institution

Exclusions: Records containing an invalid Health Card Number; records indicating that a provincial resident was seen in a facility outside of the province (to prevent duplicate counts); patients who had a stroke admission within one year prior to the date of the index episode; records where stroke is coded as a complication.

Calculation: A logistic regression model is fitted with age, gender, and select co-morbid conditions as independent variables. Coefficients derived from the logistic model are used to calculate the probability of in-hospital death following stroke for each case (episode). The expected in-hospital death rate is the sum of these case probabilities divided by the total number of cases, or (numerator/denominator) x 100 (expressed as a percentage). The risk adjusted mortality rate (RAMR) is calculated by dividing the observed in-hospital death rate by the expected in-hospital death rate and multiplying by the average in-hospital death rate.

References: Hosmer, D.W., Lemeshow, S. Confidence interval estimates of an index of quality performance based on logistic regression models. Statistics in Medicine 1995; 14:2161-2172.

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Indicator 6. Improved Quality of Life

6a. Total Hip Replacement Rate
6b. Total Knee Replacement Rate

Numerator: Number of in-patient separations from acute care hospitals (discharges, sign-outs, and deaths) where the patient received a total hip replacement (or knee replacement for indicator 6b) during the year, by age and gender categories.

Denominator: Population by age and gender categories, either from census or census estimates, for the year.

Calculation: The numerator divided by the denominator, reported as a rate per 100,000 population. Standardized rates are age-adjusted using a direct method of standardization based on the July 1st, 1991 Canadian population as follows:

Age	Pop.	Age	Pop.
<1	403,061	45-49	1,674,153
1-4	1,550,285	50-54	1,339,902
5-9	1,953,045	55-59	1,238,441
10-14	1,913,115	60-64	1,190,217
15-19	1,926,090	65-69	1,084,588
20-24	2,109,452	70-74	834,024
25-29	2,529,239	75-79	622,221
30-34	2,598,289	80-84	382,303
35-39	2,344,872	85-89	192,410
40-44	2,138,891	90+	95,467

Exclusions: Patients not treated as in-patients in acute care hospitals and those who received their surgery prior to admission.

Sources: Hospital Morbidity Database, CIHI. Canada Census, Statistics Canada.

7. Reduced Burden of Disease, Illness and Injury

7a. Age-Standardized Incidence Rates for Lung, Prostate, Breast, and Colorectal Cancer

Numerator: Observed cases of particular cancer incidence, age-standardized using the 1991 Canadian population as the standard population.

Denominator: Total standard population. The 1991 Canadian population is used as the standard population.

Calculation: The age-standardized rate for each cancer site is calculated by multiplying each observed age-specific incidence rate by the standard population in the corresponding age-group, summing the results, multiplying the sum by 100,000 and then dividing the product by the total standard population. The 1991 Canadian population is used as the standard population.

Exclusions: Non-residents of Canada.

Source: Statistics Canada, Canadian Cancer Registry, and Demography Division (census population estimates).

References: Statistics Canada – Cancer Incidence (CCR Shelf tables – IARC rules).

7b. Potential Years of Life Lost Due to Lung, Prostate, Breast and Colorectal Cancer, AMI, Stroke, Suicide, and Unintentional Injury

Numerator: Deaths of persons under exact age 75, by age group, sex and cause. Take the midpoint in each age group, subtract from 75 and multiply the number of deaths in that age group disaggregated by sex and cause of death. This represents potential years of life lost (PYLL).

Denominator: Population estimate (only if a rate is desired; otherwise, no denominator).

Calculation: Formula is as follows:

Age group	Yrs lost	Age group	Yrs lost
0-1	74.9	35-39	37.5
1-4	72.0	40-44	32.5
5-9	67.5	45-49	27.5
10-14	62.5	50-54	22.5
15-19	57.5	55-59	17.5
20-24	52.5	60-64	12.5
25-29	47.5	65-69	7.5
30-34	42.5	70-74	2.5

Total PYLL = the sum of all deaths in each age group multiplied by years lost (as per the table above)

Crude cause-specific PYLL rate = the sum of all deaths in each age group due to specific cause multiplied by years lost/estimated population, and multiplied by 100,000 (expressed as a rate per 100,000 population)

Exclusions: Non-residents of Canada are excluded from the deaths and population estimates used in the numerator and denominator.

Source: Statistics Canada, Vital Statistics, Death Database and Demography Division (population estimates).

7c. Incidence Rates of Vaccine-Preventable Diseases

7c(i). Invasive Meningococcal Disease Incidence Rate

Numerator: Total number of cases of the specific disease in people under 20 years of age.

Denominator: Total population under 20 years of age.

Calculation: (Numerator/denominator) x 100,000 (reported as a rate per 100,000).

Source: Notifiable disease records and enhanced surveillance, CIHI.

7c(ii). Measles Incidence Rate

Numerator: Total number of cases of the specific disease.

Denominator: Total population.

Calculation: (Numerator/denominator) x 100,000 (reported as a rate per 100,000).

Source: Notifiable disease records and enhanced surveillance, CIHI.

7c(iii). Haemophilus Influenzae b (Invasive) (Hib) Disease Incidence Rate in Children

Numerator: Total number of cases of the specific disease in children under 5 years of age.

Denominator: Total population under 5 years of age.

Calculation: (Numerator/denominator) x 100,000 (reported as a rate per 100,000).

Source: Notifiable disease records and enhanced surveillance, CIHI.

7d. Prevalence of Diabetes

Numerator: The prevalence of diabetes is measured based on the following diagnoses criteria:
Hospital Discharge

The first three diagnosis codes from the hospital data are used and are examined for an ICD-9 (or ICD-9CM) code of 250.

Physician Claims

In determining a diagnosis of diabetes, the diagnosis code is examined for occurrences of the ICD-9 code of 250.

Case Definition

The case definition currently being utilized for the NDSS is the so-called 'Manitoba' rule that was initially designed by Blanchard et al. The rule examines the hospital and medical data for diabetes-mellitus diagnosis (e.g. ICD-9 250). A person is defined in the NDSS as having DM if there is a hospitalization or there were two physicians' visits within a two-year (730 day) period. The case date is the earliest of those dates.

Denominator: The Health Insurance Registry is used as the population base.

Calculation: (Numerator/denominator) x 100 (represented as a percentage).

Exclusions: Persons under 20 years of age. Persons not insured at some time during the fiscal year. A person must be eligible for provincial/territorial health insurance in the year of analysis to be considered. The person must be eligible at the time the person is diagnosed with diabetes. The person is only included in the analysis up to the last date for insurance coverage (e.g. the person moves out of province or dies). The registry is used to determine the exposure. For example, a person has been living in a province or territory for a number of years but dies on July first. That person only is considered to have 6 months (approximately 180 days) observed in that year.

One of the necessities for the NDSS was that the registry ID be a 'life time' identifier. That is, if a person moved out of province or dies, their number would never be reassigned. This is crucial due to the case definition being utilized and in order to do any sort of longitudinal analysis.

Source: The National Diabetes Surveillance System (NDSS) Database.

There are three data sources used by the NDSS: Health Insurance Registry File, Hospital Discharge Data and Physician Billing Information.

Indicator 8. Waiting Times for Key Diagnostic and Treatment Services

8a. Wait Times for Cardiac Surgery

8a(i). Estimated Number of Months to Clear Current Wait List for CABG

Numerator:	Total number of adults (aged 20 and over) who have received cardiac catheterization and been designated by a physician as needing coronary artery bypass graft (CABG) surgery, but have not yet received their surgery on the last day of the period in question.
Denominator:	The average number of CABGs completed per month within the specified period.
Calculation:	(Numerator/denominator).
Exclusions:	Only "isolated" CABG cases, uncomplicated by any other procedure (e.g. valve repair or replacement) are included. Where possible, individuals were not counted in the numerator if a decision has been made, either by the individual or his/her physician, not to proceed with surgery or to delay surgery for medical or other reasons.
Source:	The Cardiac Care Network of Ontario.

8a(ii). Median Wait in Days for CABG Surgery

Exclusions:	Only "isolated" CABG cases, uncomplicated by any other procedure (e.g. valve repair or replacement) are included. Where possible, individuals were not counted in the numerator if a decision has been made, either by the individual or his/her physician, not to proceed with surgery or to delay surgery for medical or other reasons.
Source:	The Cardiac Care Network of Ontario.

8a(iii). Distribution of CABG Wait Times

Exclusions:	Only "isolated" CABG cases, uncomplicated by any other procedure (e.g. valve repair or replacement) are included. Where possible, individuals were not counted in the numerator if a decision has been made, either by the individual or his/her physician, not to proceed with surgery or to delay surgery for medical or other reasons.
Source:	The Cardiac Care Network of Ontario.

Indicator 9. Patient Satisfaction

9a. Patient Satisfaction – Overall healthcare Services Received
9b. Patient Satisfaction – Services Received in a Hospital
9c. Patient Satisfaction – Services Received from a Family Doctor or Other Physician
9d. Patient Satisfaction – Community-Based Services Received

Numerator:	Weighted number of individuals aged 15 and over who rated themselves as very satisfied or somewhat satisfied with the way the specific healthcare service was provided.
Denominator:	Population aged 15 and over who reported receiving the specific healthcare service in the past 12 months.
Calculation:	(Numerator/denominator) x 100 (expressed as a percentage).
Exclusions:	Persons living on First Nation reserves and on Crown lands, residents of institutions, full-time members of Canadian Armed Forces and residents of certain remote regions are excluded from the sample.
Source:	Statistics Canada, Canadian Community Health Survey (sub-sample approximately 25,000) – Cycle 1.1 2000.

Indicator 10. Hospital Re-admissions for Selected Conditions

10a. Re-admission Rate for Acute Myocardial Infarction

Unit of Analysis: The unit of analysis is an "Episode of Care". An episode of care refers to all contiguous acute care hospitalizations including transfers. To construct an episode of care a transfer is assumed to have occurred if either of the following conditions is met:

- Admission to an acute care institution or same day surgery facility occurs within 6 hours of discharge from another acute care institution or same day surgery facility regardless of whether the transfer is coded by either institution;
- Admission to an acute care institution or same day surgery facility occurs within 6-12 hours of discharge from another acute care institution or same day surgery facility and at least one of the institutions has coded the transfer.

Numerator: Number of acute care in-patient AMI episodes with a re-admission during the year.

Inclusion Criteria:

The numerator is a subset of the denominator meeting the following conditions:

1. Re-admission within 28 days of discharge after the index episode of care
2. Emergent or urgent (non-elective) re-admission to an acute care hospital
3. Re-admission for any one of the following conditions (ICD-9):
   - Acute myocardial infarction (410)
   - Other acute and sub-acute forms of ischemic heart disease (411)
   - Old myocardial infarction (412)

- Angina pectoris (413)
- Other forms of chronic ischemic heart disease (414)
- Conduction disorders (426)
- Cardiac Dysrhythmias (427)
- Functional disturbances following cardiac surgery (429.4)
- Pneumococcal pneumonia (481)
- Other bacterial pneumonia (482)
- Bronchopneumonia, organism unspecified (485)
- Pneumonia, organism unspecified (486)
- Urinary tract infection (599.0)

Exclusion Criteria:

4. Any one of the following procedures and not also a suffix of '8' (cancelled procedure) or '9' (previous procedure) in association with the re-admission hospitalization (CCP):

• Coronary Artery Bypass Graft	(48.1)
• Angioplasty	(48.02, 48.03, 48.04, 48.09)
• Angiography/catheterization	(48.92, 48.93, 48.94, 48.95, 48.96, 48.97, 48.98, 49.95, 49.96, 49.97)
• Pacemaker Insertion	(49.7, 49.81, 49.82, 49.83, 49.84, 49.88)

Denominator: Total number of acute care AMI episodes during the year.

Inclusion Criteria:

1. Most responsible (Type M) diagnosis of Acute Myocardial Infarction (ICD-9 410 or ICD-9-CM 410) that is not also a Type 2 diagnosis (post-admit co-morbidity)

   OR

   Where another diagnosis has been coded as the most responsible and also a Type 2, and a diagnosis of Acute Myocardial Infarction, although not the most responsible, is coded as a Type 1 (pre-admit co-morbidity)

2. Discharge between April 1 and March 3 of the following year (period of case selection ends March 1 to allow for 28 days of follow-up)

3. Age at admission between 15 and 84 years

4. Gender recorded as male or female

5. Admission to an acute care institution

   - Length of stay of 3 or more consecutive days

Exclusion Criteria:

6. Records with an invalid Health Card Number

7. Discharged as a death or self sign-out

8. Any one of the following ICD-9 diagnoses recorded in any position:

- Cancer (140-172, 174-208, V58.1, V58.0)
- HIV (042, 043, 044, V08)

Calculation: A logistic regression model is fitted with age, gender, and select co-morbid conditions as independent variables. Coefficients derived from the logistic model are used to calculate the probability of re-admission for each case (i.e., index episode). The expected re-admission rate of a province is the sum of these case probabilities divided by the total number of cases. The risk adjusted re-admission rate (RARR) is calculated by dividing the observed re-admission rate of each province by the expected re-admission rate of the province and multiplying by the average re-admission rate.

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Hosmer, D.W., Lemeshow, S. Confidence interval estimates of an index of quality performance based on logistic regression models. Statistics in Medicine 1995; 14:2161-2172.

Hospital Report Acute Care 2001. Technical notes, Clinical Utilization and Outcomes. Canadian Institute for Health Information and the University of Toronto. A joint initiative of the Ontario Hospital Association and the Government of Ontario, 2001.

Maynard, C., Every, N.A., Weaver, W.D. Factors associated with re-hospitalization in patients with acute myocardial infarction. Am J Cardiol 1997; 80:777-779.

Source: Hospital Morbidity Database, CIHI.

10c. Re-admission Rate for Pneumonia

Unit of Analysis: The unit of analysis is an "Episode of Care". An episode of care refers to all contiguous acute care hospitalizations including transfers. To construct an episode of care a transfer is assumed to have occurred if either of the following conditions is met:

- Admission to an acute care institution or same day surgery facility occurs within 6 hours of discharge from another acute care institution or same day surgery facility regardless of whether the transfer is coded by either institution;
- Admission to an acute care institution or same day surgery facility occurs within 6-12 hours of discharge from another acute care institution or same day surgery facility and at least one of the institutions has coded the transfer.

Numerator: Number of pneumonia episodes with a re-admission for a given year

Inclusion Criteria:

The numerator is a subset of the denominator meeting the following conditions:

1. Re-admission within 28 days of discharge after the index episode of care

2. Emergent or urgent (non-elective) re-admission to an acute care hospital

3. Re-admission for any one of the following conditions (ICD-9):

- Pneumococcal pneumonia (481)
- Other bacterial pneumonia (482)
- Bronchopneumonia, organism unspecified (485)
- Pneumonia, organism unspecified (486)
- Other specified bacteria (0084)
- Staphylococcal septicemia (0381)
- Empyema (510)
- Unspecified pleural effusion (511.9)
- Urinary tract infection, site not specified (599.0)

Denominator: Total number of pneumonia episodes in an 11-month period

Inclusion Criteria:

1. Most responsible (Type M) diagnosis of Pneumonia (ICD-9 481, 482, 485, 486) that is not also a Type 2 diagnosis (post-admit co-morbidity)

OR

Where another diagnosis has been coded as the most responsible and also a Type 2, and a diagnosis of Pneumonia, although not the most responsible, is coded as a Type 1 (pre-admit co-morbidity)

2. Discharge between April 1 and March 3 of the following year (period of case selection ends March 1 to allow for 28 days of follow-up)

3. Age at admission between 15 and 84 years

4. Gender recorded as male or female

5. Admission to an acute care institution

Exclusion Criteria:

6. Records with an invalid Health Card Number

7. Discharged as a death or self sign-out

8. Any one of the following ICD-9 diagnoses recorded in any position:

- Cancer (140-172, 174-208, V58.1, V58.0)
- HIV (042, 043, 044, V08)

Calculation: A logistic regression model is fitted with age, gender, and select co-morbid conditions as independent variables. Coefficients derived from the logistic model are used to calculate the probability of re-admission for each case (i.e., index episode). The expected re-admission rate of a province/territory is the sum of these case probabilities divided by the total number of cases. The risk adjusted re-admission rate (RARR) is calculated by dividing the observed re-admission rate of each province/territory by the expected re-admission rate of the province/territory and multiplying by the average re-admission rate.

References:

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Heller, R.F., Fisher, J.D., D'Estr, C.A., Lim, L.L.-Y., Dobson, A.J.,

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Hosmer, D.W., Lemeshow, S. Confidence interval estimates of an index of quality performance based on logistic regression models. Statistics in Medicine 1995; 14:2161-2172.

Hospital Report Acute Care 2001. Technical notes, Clinical Utilization and Outcomes. Canadian Institute for Health Information and the University of Toronto. A joint initiative of the Ontario Hospital Association and the Government of Ontario, 2001.

Maynard, C., Every, N.A., Weaver, W.D. Factors associated with re-hospitalization in patients with acute myocardial infarction. Am J Cardiol 1997; 80:777-779.

Source: Hospital Morbidity Database, CIHI.

11. Access to 24/7 First Contact Health Services

Numerator: There were 4 separate call classifications performed, creating four different numerators.

1. The number of care recipients in a specific age profile.
2. The number of care recipients who are male and the number of care recipients who are female.
3. The telephone area code of the caller.
4. The caller disposition (referral to physician, etc.).

Denominator: The total number of calls for care recipients received from December 1st, 2001 to June 30, 2002.

Calculation: (Numerator/denominator) x 100 (expressed as a percentage).

Source: Ontario Telehealth Database, the Clinidata Corporation, 2002.

Indicator 12. Home and Community Care Services

12a. Admissions to Publicly-Funded Home Care Services Per Capita
12b. Admissions to Publicly-Funded Home Care Services Per Capita 75+

Numerator:	12a - Total number of admissions to home care services (healthcare and home support) during the fiscal year. 12b – Total number of admissions age 75+ to home care services (healthcare and home support) during the fiscal year.
Denominator:	12a - Total provincial population. 12b – Total provincial population age 75+. (These figures come from census or census estimates.)
Calculation:	(Numerator/denominator).
Exclusions:	None (administrative data do not allow for exclusion of out-of-province patients).
Source:	Ad hoc survey of provincial and territorial ministries; Statistics Canada census.

12d. Hospitalization Rate for Ambulatory Care Sensitive Conditions

Numerator:	Number of Ambulatory Care Sensitive Conditions (ACSC) in-patient separations from acute care hospitals (discharges and deaths) during the year, by age and gender categories. Diagnosis Code(s): Based on the Alberta Health reference below, an ICD-9 or ICD-9-CM primary diagnosis code of: 250 Diabetes mellitus 291 Alcoholic psychoses 292 Drug psychoses 300 Neurotic disorders 303 Alcohol dependence syndrome 304 Drug dependence 305 Non-dependent abuse of drugs 311 Depressive disorder, not elsewhere classified 401 Essential hypertension 402 Hypertensive heart disease 403 Hypertensive renal disease 404 Hypertensive heart and renal disease 405 Secondary hypertension 493 Asthma
Denominator:	Population by age and gender categories, either from census or census estimates, for the year.
Calculation:	Standardized rates are age-adjusted using a direct method of standardization based on the July 1, 1991 Canadian population.
Exclusions:	Patients not treated as in-patients in acute care hospitals (e.g. those seen only in an emergency department or chronic care institution).

Source: Hospital Morbidity Database, CIHI; Census, Statistics Canada.

References: Alberta Health. (1998, Dec). Health authority business plan and annual report requirements, 1999-2000 to 2001-2002, p.22. Edmonton, AB: Alberta Health.

Anderson,G.M. (1996). Common conditions considered sensitive to ambulatory care. In V. Goel, J. I. Williams, G.M. Anderson, P. Blackstien-Hirsch, C. Fooks, & C.D. Naylor (eds.), Patterns of healthcare in Ontario. The ICES practice atlas (2nd edition.) p.104-110. Ottawa, ON: Canadian Medical Association.

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Indicator 13. Public Health Surveillance and Protection

13a. Tuberculosis Incidence Rate

Numerator: Number of reported cases of new active and relapsed tuberculosis.

Denominator: Total population.

Calculation: (Numerator/denominator) x 100,000 (expressed as a rate per 100,000 population).

Exclusions: None.

Source: Canadian Tuberculosis Reporting System (CTBRS).

13b. Reported HIV Diagnoses

Numerator: Number of newly diagnosed cases of HIV infection.

Denominator: Total population.

Calculation: (Numerator/denominator) x 100,000 (expressed as a rate per 100,000 population).

Exclusions: None.

Source: Health Canada. HIV and AIDS in Canada: Surveillance Report to Dec 31, 2001. Division of HIV/AIDS Epidemiology and Surveillance.

13c. Verotoxogenic E. coli Incidence Rate

Numerator:	Number of reported cases of Verotoxogenic E. coli.
Denominator:	Total population.
Calculation:	(Numerator/denominator) x 100,000 (expressed as a rate per 100,000 population).
Exclusions:	None.
Source:	Notifiable disease records, Health Canada, CIHI website. Statistics Canada.

13d. Chlamydia Incidence Rate

Numerator:	Reported cases of genital Chlamydia infection.
Denominator:	Total population by age group.
Calculation:	(Numerator/denominator) x 100,000.
Exclusions:	None.
Source:	Notifiable disease reports, Health Canada, CIHI website. Statistics Canada.

13e. Exposure to Environmental Tobacco Smoke

Numerator:	Total number of non-smoking persons reporting exposure to environmental tobacco smoke in public spaces and in workplaces (separately).
Denominator:	Total non-smoking population.
Calculation:	(Numerator/denominator) x 100 (expressed as a percentage).
Exclusions:	None.
Source:	Canadian Community Health Survey, Cycle 1.1 – 2000/2001, Statistics Canada.

Indicator 14. Health Promotion and Disease Prevention

14a. Percent Teenaged Smokers

Numerator:	Weighted number of individuals aged 12-19 who report currently smoking daily or occasionally. Daily smoking refers to smoking at least one cigarette per day for each of the 30 days preceding the survey. Occasional smoking refers to smoking at least one cigarette during the past 30 days preceding the survey, but not every day.
Denominator:	Total population aged 12-19.
Calculation:	(Numerator/denominator) x 100 (expressed as a percentage).
Source:	Canadian Community Health Survey, 2000, Statistics Canada; National Population Health Survey, 1994, 1996, 1998, Statistics Canada.

14b. Physical activity

Numerator:	a)Number of individuals reporting combined active (> 3.0 kcal/kg/day) and moderately active levels of physical activity (1.5-2.9 kcal/kg/day). b) Number of individuals reporting an inactive level of physical activity (<1.5 kcal/kg/day).
Denominator:	Total population aged 12 and over.
Calculation:	(Numerator/denominator) x 100 (expressed as a percentage).
Source:	Canadian Community Health Survey – Cycle 1.1, 2000, Statistics Canada. National Population Health Survey, 1994, 1996, 1998, Statistics Canada.

14c. Body Mass Index

Body mass index (BMI) - International standard - relates weight to height, and is a common method of determining if an individual's weight is in a healthy range based on their height. Body mass index (BMI) - International standard - is calculated as follows: Weight in kilograms divided by height in metres squared.

Numerators:	The number of people aged 20 to 64, reporting a BMI in each of the four categories shown below: The index is: under 18.5 (underweight), 18.5-24.9 (acceptable weight), 25.0-29.9 (overweight) and 30.0 or higher (obese).
Denominator:	Total population aged 20 to 64.
Calculation:	(Numerator/denominator) x 100 (expressed as a percentage).
Exclusions:	Individuals less than 20 years of age, pregnant women, persons less than 3 feet (0.914 metres) tall, or persons greater than 6 feet 11 inches (2.108 metres).
Source:	Canadian Community Health Survey – Cycle 1.1, 2000, Statistics Canada. National Population Health Survey, 1994, 1996, 1998, Statistics Canada.

14d. Immunization for Influenza

Numerator:	Estimated population 65 to 74 years of age and 75+ reporting: (a) immunization less than one year ago; (b) immunization one year or more ago; (c) never immunized.
Denominator:	Total population aged 65 to 74 years of age and 75+.
Calculation:	(Numerator/denominator) x 100 (expressed as a percentage).
Source:	Canadian Community Health Survey (sub-sample) – Cycle 1.1, 2000, Statistics Canada.